JEFFERSON COUNTY
DEPARTMENT OF ADMINISTRATIVE SERVICES
729 MAPLE ST / PO BOX 100
HILLSBORO MO 63050
WWW.JEFFCOMO.ORG

BID #: 20-0039

Invitation for Bid: **ANIMAL RESOURCE CENTER REMODELING AND ADDITION PROJECT NO. PW20B035BLD** **Date Issued:** **4-21-2020**

BIDS SHALL BE ACCEPTED UNTIL: TUESDAY, JUNE 2, 2020, AT 2:00 P.M. LOCAL TIME.

Specification Contact:

JASON JONAS
Department of Public Works
636-797-5369
jjonas@jeffcomo.org

Contract Contact:

JACKIE TALARSKI
Department of Administrative Services
636-797-5380

Mail (3) Three Complete Copies With Vendor And Bid Information As Shown In Sample:

SAMPLE ENVELOPE

VENDOR NAME
VENDOR ADDRESS
CONTACT NUMBER

DEPARTMENT OF THE COUNTY CLERK
JEFFERSON COUNTY MISSOURI
729 MAPLE ST / PO BOX 100
HILLSBORO MO 63050-0100

SEALED BID: (*BID NAME*)

Contract Term:

ONE YEAR CONTRACT WITH A ONE YEAR RENEWAL OPTION UPON APPROVAL OF THE COUNTY COUNCIL AND COUNTY EXECUTIVE

The undersigned certifies that he/she has the authority to bind this company in an agreement/contract to supply the commodity or service in accordance with all terms, conditions, and pricing specified. This Bid, if accepted, will constitute an Agreement and Contract with Jefferson County, Missouri, upon approval of the County Council and County Executive. Prices are firm during this agreement term, unless agreed upon in writing by the County. The County has the option to renew this agreement at the same terms and conditions as the original agreement for one additional one-year term with the written consent of the successful Bidder. Price increases for renewals are not authorized unless approved in writing by the County.

Vendor Information:

Company Name	**Authorized Agent (Print)**
Address	**Signature**
City/State/Zip Code	**Title**
Telephone #	**Date** **Tax ID #**
E-mail	**Fax #**

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REQUIRED DOCUMENTS

1. **Current and valid Certificate of Insurance or binder showing required insurance coverage must be provided with each bid.**
   (County must be added as additional insured if awarded)

2a. **Proof that Bidder does not owe delinquent real or personal property in Jefferson County (tax receipts for past 3 years)**
   Obtain receipts at http://jeffersonmo.devnetwedge.com

Or

2b. **A notarized affidavit stating that the applicant does not own any real estate or personal property in Jefferson County on company letterhead.**

3. **A Notarized affidavit of work authorization and current business entity status with E-verification documentation. (pages 9 & 10)**

4. **Agreement to be executed by the County upon approval by the County Council and County Executive. (Bidder is required to complete company information and execute signature)**

5. **Cooperative Bid Form (last page)**

6. **All pages of the Invitation for Bid/Request for Proposal must be used when submitting your bid/proposal response along with initialing each page with the bid/proposal. Additional information may be included separately.**

7. **Bid deposits/bonds must be in the exact amount as stipulated in the bid. (if required)**

***BIDS MAY BE REJECTED IF REQUIRED DOCUMENTATION IS NOT INCLUDED OR COMPLETED AT DISCRETION OF THE COUNTY**

1.0 BID REQUIREMENTS

Bidder shall initial all pages and return where the Bid Document denotes "BIDDER"S INITIALS: _____"

1.1 BID SUBMISSION:

Submit bid form in original (one original) and two (two copies) with all specification pages, if applicable. No facsimile or electronic bids shall be accepted and shall be rejected. The Vendor prior to the submission dead line as stated on page 1 must submit all bids. Late bids will not be accepted and returned to the vendor unopened. The County reserves the right to request additional written or oral information from Respondents in order to obtain clarification. A fully executed Affidavit is required by Section 285.530 RSMo and shall be submitted with the bid form. A copy of the Affidavit is attached hereto. Failure to execute the Affidavit shall result in the bid being rejected. Failure to comply with any provision, provide any required documentation, insurance forms or deposits or bonds in exact amounts or any other term or condition that is not in strict conformance shall result in the bid being rejected.

1.2 BASIS OF BID AWARD:

Award may be made on an item-by-item basis to the lowest and best Bidder(s) or award may be made to the lowest and best bid total, whichever provides the greatest value to the County from the standpoint of suitability to purpose, quality, service, previous experience, price, ability to deliver, or any other reason deemed to be in the best interest of the County. Quantities stated herein represent an estimate for the period stated. Orders shall be placed for actual requirements as needed. The County may reject any or all bids for any reason and may waive any informality. Bids submitted from a Missouri State Contract shall include a copy of the State Contract with the bid. Bid award does not constitute an order or obligation to order by the County. The issuance of a Purchase Order Number shall be construed as acceptance of a Contract with all terms, conditions, and prices firm during the length of the agreement terms.

1.3 BID AWARD:

It is further agreed that the Contract shall not be valid and binding upon the County until approved by the County Counselor, as to legal form and is subject to the Ordinances, Resolutions and Orders of Jefferson County, Missouri, and State and Federal Law. If no Bid or Bids have been awarded by the County Council within forty-five (45) days following the opening of the bids then all bids will be deemed Rejected.

1.4 BID PREPARATION:

1. Bidders are responsible for examination of drawings, specifications, schedules and instructions. Failure to do so will be at the Bidder's risk.
2. Each Bidder shall furnish the information required by the invitation. The Bidder shall sign all required documents. All deletions and erasures shall be initialed
3. Alternate bids for supplies or services other than specified shall not be considered unless authorized by invitation.
4. Bidder shall state a definite time for delivery of goods or for performance of services unless otherwise specified in the invitation for bid.
5. When specified, samples must be timely submitted and at no expense to the County.
6. Failure to adhere to all requirements may result in the response being disqualified as non-responsive.

1.5 MODIFICATION OR WITHDRAWAL OF BIDS:

Bids may be modified or withdrawn prior to the exact hour and date specified for receipt of bids, provided the modification or withdrawal is in writing and is delivered in the same manner as a bid submission.

1.6 LATE BIDS:

It is the responsibility of the Bidder to deliver his bid or bid modification on or before the date and time of the bid closing to the Department of the County Clerk. Bids received late will be rejected and returned unopened to the Bidder.

1.7 BID DEPOSITS/BONDS:

Bid Deposits/Bonds are not required unless specified in the specifications. Bid deposits/Bonds must be in the exact amount as stipulated in the bid.

1.8 MATERIAL AVAILABILITY:

Bidders must accept responsibility for verification of material availability, product schedules and other pertinent data prior to submission of bid and delivery time. It is the responsibility of the Bidder to notify the County immediately if the materials specified are discontinued, replaced, or not available for an extended period of time. All materials ordered by the County, shall be as needed. A sample of materials may be requested.

1.9 ALTERNATE BIDS:

Alternate Bids for items will be accepted except when stated "**NO SUBSTITUTIONS".** Bidders must submit complete specifications on all alternate bids with the bid form. Alternate bids without complete specifications may be rejected. Alternate bids and exceptions to bid clauses must be clearly noted on the bid form. The County may accept or reject alternate bids; whatever is most advantageous to the County.

1.10 INCORPORATION OF DOCUMENTS:

The terms of the Bid Invitation, Bid Specifications, Bid Form are and shall be incorporated into the contract as if fully setout therein. The Bid, if accepted and approved by the County Council and County Executive shall constitute the terms of a Contract or Agreement with Jefferson County, Missouri, subject to any further Amendments, Memoranda or other documents or specifications which must be set forth in writing and signed by all parties.

1.11 ADDENDA:

Addenda to bid specifications are incorporated by reference as if fully setout herein. It is the responsibility of the vendor to insure and verify that they are in receipt of and completed all attached addenda's prior to submission of bid forms. Verification is made by contacting the Office of Contracts and Grants at (636) 797-5380, or by reviewing the County Web Site. (www.jeffcomo.org).

1.12 INSURANCE:

The Vendor/Contractor shall purchase and maintain insurance with an insurance company licensed to do business in the State of Missouri or in the state where the vendor is incorporated or otherwise licensed to do business and which shall remain, at all times during the term of any contract with the County, in full force and effect. Preference will be given to a Vendor/Contractor who provides insurance with an insurance company licensed to do business in the State of Missouri, but in any event said Vendor/Contractor shall provide said insurance at its own expense. Such insurance shall be provided as will protect the Vendor/Contractor from claims which may arise out of or result from the Vendor/Contractor's execution of the work, whether such execution be by himself, his employees, agents, or by anyone for whose acts any of them may be liable. If any such work covered by the Contract is to be performed on County owned or leased premises, the Vendor agrees to carry liability and workman's compensation insurance, satisfactory to the County, and to indemnify the County against all liability, loss, and damage arising out of any injuries to persons and property caused by the Vendor, his sub-contractors, employees or agents. The insurance coverage shall be such as to fully protect the County and the general public from any and all claims for injury and damage resulting by any actions on the part of the Vendor/Contractor or its' forces as enumerated above. All policies must name the County as an additional insured and provide for thirty (30) days written prior to any material changes or cancellation. Any disputes regarding a breach, insurance amounts, liability, coverage, lapse or otherwise shall be litigated in the Circuit Court of Jefferson County, Missouri and the same shall be incorporated into any Contract agreed to by the parties.

THE COUNTY REQUIRES A CURRENT AND VALID CERTIFICATE OF INSURANCE OR BINDER SHOWING REQUIRED INSURANCE COVERAGE MUST BE PROVIDED WITH EACH BID. JEFFERSON COUNTY MUST BE ADDED AS AN ADDITIONAL INSURED AFTER AWARD OF THE BID. ANY LAPSE IN INSURANCE COVERAGE OR CANCELLATION THEREOF BY THE CONTRACTOR OR SUB-CONTRACTORS DURING THE TERMS OF THE CONTRACT SHALL IMMEDIATELY BE DEEMED A MATERIAL BREACH UNDER THE TERMS OF ANY CONTRACT.

A. (X)Required ( ) Not Required **Comprehensive General Liability Insurance**

The Vendor/Contractor shall maintain and keep in full force and effect during the terms of this Contract such comprehensive general liability insurance as shall protect them from claims which may arise from operations under this Contract, whether such operations be by themselves or by anyone directly or indirectly employed by them. The amounts of insurance shall be not less than $1,000,000.00 combined single limit for any one occurrence covering both bodily injury and property damage, including accidental death.

B. ( ) Required (X) Not Required **Professional Liability Insurance**

The Vendor/Contractor shall provide the County with proof of Professional Liability Insurance, which shall protect the County against any and all claims, which might arise as a result of the operation of the Vendor/Contractor in fulfilling the terms of this Contract during the life of the Contract. The minimum amounts of such insurance will be $1,000,000.00. Should any work be subcontracted, these limits will also apply.

C. (X)Required ( ) Not Required **Worker's Compensation Insurance:**
per Missouri Revised Statutes Chapter 287

The Vendor/Contractor or his sub-contractor or contractors, shall maintain and keep in force of this Contract such worker's compensation insurance limits as required by the statues of the State of Missouri and Employer's Liability with limits no less than $500,000.00.

1.13 BID SUBMISSIONS

Bids submitted on separate forms are NOT acceptable unless specified in the Bid Document. Failure to complete bid forms to the satisfaction of the County may result in rejection of your bid. It is the responsibility of each Bidder before submitting a bid to examine ALL documents thoroughly, and request written or oral interpretation of clarifications soon after discovering any conflicts, ambiguities, errors, or omissions in the bidding documents. Request for clarification must be received prior to bid openings.

1.14 BID OPENINGS

Bids will be publicly opened and read aloud at the time indicated on page 1. The Bidders and the public are invited but not required to attend the formal opening of the bids. No decisions relating to the award of a contract or agreement will be made at the opening.

1.15 BID TABULATIONS

Bid Tabulations are not available for 5 to 7 business days following the Bid Opening. Bid submissions are open for public review at the time of the Bid Opening. Bid tabulations are posted on the County's web-site address, www.jeffcomo.org. **NO COPIES** of bid tabulations are sent to vendors.

2.0 BID RESPONSE AND CONTRACT

2.1 BIDDER REPRESENTATIONS:

The Bidder, by executing the Bid form certifies that:

A. The bid complies with Invitation for Bid form and Bid Specifications.
B. Bidder is not debarred or suspended from participation in Federal Assistance programs.

2.2 TAXES:

No bid or proposal shall be awarded by Jefferson County unless the prospective Bidder provides proof that the Bidder does not owe delinquent real or personal property taxes to Jefferson County. The prospective Bidder is required to provide proof in the form of an original paid tax receipt issued by the Jefferson County Collector or a verified affidavit stating that the applicant does not own any real or personal property in Jefferson County. Tax receipts for the past 3 years are required and may be obtained at http://jeffersonmo.devnetwedge.com/ or a notarized affidavit stating that the applicant does not own any real or personal property in Jefferson County on company letterhead.

Section 135.040 of the Jefferson County Code of Ordinances (Ord. No. 10-0411) requires that no bid or proposal shall be awarded by Jefferson County unless the prospective Bidder provides proof that the Bidder does not owe delinquent real or personal property, or that the Bidder does not own any real or personal property in Jefferson County. All delinquent real or personal property taxes shall be paid, in-full, prior to the award of any bid, or proof shall be provided that the Bidder does not own any real or personal property in Jefferson County prior to the award of any bid. Jefferson County considers that the failure to pay any and all real or personal property taxes due Jefferson County, Missouri, the failure to report all real or personal property owned, held or used in Jefferson County, the failure to provide proof thereof, and/or the failure to keep said tax bills current shall be deemed a material breach of the contract and will subject the contract to immediate cancellation. All taxes, due and owing, must be paid in full at the time the bid is awarded by Jefferson County and remain paid during the entire term of the contract unless the prospective Bidder provides proof that the Bidder does not own real or personal property in Jefferson County. This requirement shall not apply to the award of bids for projects which are funded in whole or in part by Federal funds.

2.3 CERTIFICATION OF INDEPENDENT PRICE DETERMINATION:

A. The prices in the bid shall be independently determined, without consultation, communication, or agreement for the purpose of restricting competition as to any matter relating to price with any Bidder or other person.
B. Unless otherwise required by law, the prices shall not have been knowingly disclosed by the Bidder prior to opening.
C. No attempt has been made or will be made by the Bidder to induce any other person or firm to submit or not to submit a bid.

2.4 PRICE:

The price(s) specified in this bid shall be firm and not subject to contingency or reservation. If the Vendor fails to honor stated prices as submitted in the Bid Form or Contract, the County reserves the right to obtain the same items from the next lower vendor who submitted a bid price for the item. The original vendor shall be responsible for the difference in price and required to make restitution to the County for the difference in price. The Bidder represents prices specified in the bid do not exceed current selling price for the same or substantially similar good or service, and are the same as or lower than other prices charged to the Bidder's most favored customer. In the event the stated prices are determined to be higher than the prices for which Supplier has sold the items, or services, to others, this contract price shall be reduced accordingly. **Bid prices are ALL INCLUSIVE: (Shipping, Handling, Delivery, and Assembly to locations specified by the County). Prices shall be firm for ALL County departments and locations for term of the agreement**.

2.5 MISSOURI DOMESTIC PRODUCT PROCUREMENTACT:

Bidder represents that the goods provided comply with Sections 34.350 to 34.359, RSMo, known as the Domestic Product Procurement Act. The Act encourages the purchase of products manufactured or produced in the United States, State of Missouri, and Jefferson County, Missouri. Bidder shall include proof of compliance with the Act with the bid when requested.

2.6 NON-EXCLUSIVE AGREEMENT:

The contractor shall understand and agree that the contract shall not be construed as an exclusive agreement and further agrees that the County may secure identical and/or similar services or products from other sources at anytime in conjunction with or in replacement of the contractor's services.

2.7 DEFINITIONS:

A. The term "County" means the Jefferson County, Missouri and its designated representatives.
B. The term "Vendor" means Supplier, Contractor, and Seller and includes designated representatives.
C. The term "IFB" means Invitation for Bid.
D. The term "Agreement/Contract means Binding Agreement, Contract, Request for Purchase, Order.

2.8 INSPECTION, ACCEPTANCE AND APPROVALS:

Goods shall at all times and places, including the period of manufacture, are subject to inspection and test by County. County will accept or give notice of rejection of goods delivered within a reasonable time after receipt. Acceptance shall not waive any warranty. All goods supplied are subject to final inspection and acceptance by County notwithstanding payment, prior inspections or approvals. County may require prompt replacement or correction of rejected goods at Supplier's expense, including a reduction in price for rejected goods. Supplier shall not resubmit rejected goods to County without prior written approval and instructions from County. In addition, Supplier shall identify resubmitted goods as previously rejected. Supplier shall provide and maintain a quality assurance and control system acceptable to County.

2.9 WARRANTY:

Unless otherwise agreed to in writing by the parties, Supplier warrants that items ordered to specifications will conform thereto and to any drawings, samples or other descriptions furnished or adopted by County, or, if not ordered to specifications will be fit and sufficient for the purpose intended, and that all items will be new, merchantable, of good material and workmanship, and free from defect. Such warranties, together with Supplier's service warranties and guarantees, if any, shall survive inspection, test, acceptance of, and payment for the items and shall run to County and its assigns. Except for latent defects, the County shall give notice of any nonconformity to the Supplier within one (1) year after acceptance. County may return for credit or require prompt correction or replacement of the defective or non-conforming goods or have the defective good corrected or replaced at Supplier's expense. Return to Supplier of any defective or non-conforming goods and delivery to County of any corrected or replaced goods shall be at Supplier's expense. Defective or non-conforming items shall not be corrected or replaced without written authorization by County. Goods required to be corrected or replaced shall be subject to the provisions of this clause and the clause hereof entitled "Inspection, Acceptance and Approvals" in the same manner and to the same extent as goods originally delivered under this contract.

2.10 PAYMENT:

County will pay Supplier for goods upon delivery to, submission of certified invoices with attached tipping fee receipts and acceptance. The County will not be responsible for articles or services furnished without a purchase order. Price is tax-exempt.

2.11 CHANGE ORDER:

County may make changes within the general scope of this contract. If any such changes cause an increase or decrease in the cost of or the time required for the performance of any part of the work, whether changed or not changed by any such order, an equitable adjustment shall be made in the price or delivery schedule or both, and any change order shall be in writing. Any claim by a Supplier for adjustment under this clause shall be asserted within fifteen (15) days from the date of receipt of this written order directing the change, provided, however, County, if it decides that the facts justify such action, may receive and act upon such claim asserted at any time prior to final payment.

2.12 DELIVERIES:

Deliveries shall be made in strict accordance with any delivery schedule contained in the bid specification or contract and in the exact quantity ordered. Failure to adhere to delivery schedule is reason for termination in accordance with the "termination" clause. Deliveries are to be made at locations specified by the County at time of Order.

2.13 RESPONSIBILITY FOR SUPPLIES:

Pursuant to Section 290.560 RSMo, Supplier/Contractor shall employ only Missouri laborers and laborers from nonrestrictive states except that other laborers may be used when Missouri laborers or laborers from nonrestrictive states are not available, or are incapable of performing the particular type of work involved, if so certified by the contractor and approved by the County. Except as otherwise provided, Supplier shall be responsible and bear all risks for loss and damage to goods until delivery at County's facilities, regardless of F.O.B. point, point of inspection or acceptance; and if the goods are rejected.

2.14 SUBCONTRACTS:

Supplier shall not enter into any subcontract(s) in excess of $25,000 or 20% of this contract price; whichever is less, for any goods without County's prior written approval.

2.15 CHOICE OF LAW:

This bid and contract shall be governed and interpreted according to the laws of the State of Missouri. Venue for any court action shall be in Jefferson County, Missouri.

2.16 TERMINATION:

A. General: Performance of work may be terminated by the County in whole, or from time to time in part, whenever County shall determine that such termination is in the best interests of County with a thirty (30) day written notice. The Vendor may terminate the Agreement/Contract upon a sixty (60) day prior notice in writing. In the event of any termination of the Agreement/Contract by the Vendor, the County may purchase such supplies and/or services similar to those terminated and for the duration of the Agreement/Contract period the Vendor will be liable for all costs in excess of the established contract pricing.

B. Bankruptcy or Insolvency: In the event bankruptcy proceedings are commenced by or against Supplier or under any provisions of the United States Bankruptcy Act or for the appointment of a receiver or trustee or a general assignment for the benefit of creditors of either party, County shall be entitled to terminate without further cost or liability. The County may cancel the Agreement/Contract or affirm the Contract and hold the Vendor responsible for damages.

C. **Section 135.040 of the Jefferson County Code of Ordinances (Ord. No. 10-0411) requires that no bid or proposal shall be awarded by Jefferson County unless the prospective Bidder provides proof that the Bidder does not owe delinquent real or personal property, or that the Bidder does not own any real or personal property in Jefferson County. All delinquent real or personal property taxes shall be paid, in-full, prior to the award of any bid, or proof shall be provided that the Bidder does not own any real or personal property in Jefferson County prior to the award of any bid. Jefferson County considers that the failure to pay any and all real or personal property taxes due Jefferson County, Missouri, the failure to report all real or personal property owned, held or used in Jefferson County, the failure to provide proof thereof, and/or the failure to keep said tax bills current shall be deemed a material breach of the contract and will subject the contract to immediate cancellation. All taxes, due and owing, must be paid in full at the time the bid is awarded by Jefferson County and remain paid during the entire term of the contract unless the prospective Bidder provides proof that the Bidder does not own real or personal property in Jefferson County. This requirement shall not apply to the award of bids for projects which are funded in whole or in part by Federal funds.**

D. Default: County may terminate the whole Contract or any part in either of the following circumstances:

D-1. If supplier fails to deliver the items required by the contract within the time specified; or

D-2. If supplier fails to perform any of the other provisions of the contract, or so fails to make progress as to endanger performance of the contract in accordance with its terms, and in either of these two circumstances does not cure such failure within a period of ten (10) days after notice from County specifying such failure. In the event of termination under subparagraph 1, County shall have the right to procure, on such terms and in such manner as it may deem appropriate, items similar to those terminated, and to recover from Supplier the excess cost for such similar items provided, however, Supplier shall not be liable for such excess costs where the failure upon which the termination is based has arisen out of causes beyond the control of Supplier and without the fault or negligence of Supplier. Such causes shall be deemed to include fires, floods, earthquakes, strikes, and acts of the public enemy. The rights of County provided in subparagraph 1 shall be in addition to any other rights provided by law or the contract.

D-3. In the event of the Supplier's non-compliance with the provisions as set forth, this Contract may be cancelled, terminated or suspended in whole or in part and the supplier may be declared ineligible for further County contracts. The rights and remedies of the County provided in this paragraph shall not be exclusive but are in addition to any remedies provided in this Contract or as provided for by law.

2.17 NOTICE AND SERVICE THEREOF:

Any notice from the County shall be in writing and considered delivered and the service thereof completed when said notice is posted, by certified or regular mail, to the Supplier, at the address stated on the bid form.

2.18 CONTRACT TERM:

Performance shall be governed solely by the terms and conditions as set forth in the Invitation for Bid, Bid Specifications, Bid Form and the Contract notwithstanding any language contained on any invoice, shipping order, bill of lading or other document furnished the Seller at any time and the acceptance by the County for any goods furnished.

2.19 COMPLIANCE WITH APPLICABLE LAWS:

Supplier warrants it has complied with all applicable laws, rules and ordinances of the United States, Missouri or any other Governmental authority or agency in the manufacture or sale of the goods, including but not limited to all provisions of the Fair Labor Standards Act of 1938, as amended, including provisions of the Home Rule Charter of Jefferson County, Missouri requiring all workers performing work under any contract with Jefferson County be paid a wage that is at least the prevailing hourly rate of wages for work of a similar character in Jefferson County and shall be paid to all workers performing work under the contract. (Section 290.250 and 290.325, RSMo).

A. The contractor will forfeit a penalty to the contracting public body of $100 per day (or portion of a day) for each worker that is paid less than the prevailing rate for any work done under the contract by the contractor by any subcontractor." (Section 290.250, RSMo). For detailed information on rules and occupational titles, see 8 CSR 30-3.010 through 3.060.

B. The contractor and all subcontractors to the contract must require all onsite employees to complete the ten-hour construction safety training program and have documentation of having done so.

C. The contractor will forfeit a penalty to the contracting public body of $2500 plus an additional $100 for each employee employed by the contractor or subcontractor, for each calendar day, or portion thereof, such employee is employed without the required training. (Section 292.675 RSMo).

D. Before any work begins, you must send a **Prevailing Wage Project Notification – Contractor Information Notification** form (PW-2) to the DLS. Send it when the contract is awarded to ensure the DLS receives it timely (Section 290.262.10, RSMo, and 8 CSR 30-3.010(3)).

E. If a wage subsidy, bid, or rebate was provided, the supplement or rebate **must** be reported to the public body within 30 days of receipt of payment (Section 290.095, RSMo). Notification should be reported to: Contracts and Grants
County of Jefferson
PO Box 100
Hillsboro, MO 63050-0100

2.20 ACTS OF GOD:
No party shall be liable for delays, nor defaults due to Acts of God or the public enemy, riots, strikes, fires, explosions, accidents, governmental actions of any kind or any other causes of a similar character beyond its control and without its fault or negligence.

2.21 SELLER'S INVOICES:
Invoices shall contain the following information. Contract number (if any), Purchase Order Number, Item number, contract description of goods or services, sizes, quantities, unit prices and extended totals. Invoices for and inquiries regarding payment should be addressed to the County Accounts Payable Clerk.

2.22 APPROVAL:
It is agreed the acceptance of a Bid shall not be valid and binding upon the County until approved by the County Purchasing Agent, County Council, and the County Counselor.

2.23 RENEWAL OPTION:
The County reserves the right to negotiate the contract for one (1) additional one-year term with the written consent of the awarded vendor. If the contractor/vendor requests an increase in compensation for any renewal period, the vendor shall notify the Office of Contracts and Grants no less than 60 days prior to the end of the contract period. The County shall notify the Vendor of the intent to exercise the renewal option. However, failure to notify the Vendor does not waive the County's right to exercise the renewal option.

Indicate: [ ] Individual: [ ] Partnership: [ ] Corporation.

2.24 INDIVIDUAL, PARTNERSHIPS, CORPORATIONS:

Incorporated in the State of _____.

2.25 LITIGATION:
This agreement shall be interpreted under the laws of the State of Missouri. Any disagreements, questions, controversies, litigation or other causes of action whatsoever arising from or under the terms of this agreement shall be resolved in the trial courts of 23rd Judicial Circuit Court of the State of Missouri-Hillsboro, Missouri.

2.26 LANGUAGE: Bids and all related documents will only be accepted in the English Language.

AFFIDAVIT OF WORK AUTHORIZATION

The grantee, sub grantee, contractor or subcontractor who meets the section 285.525, RSMo definition of a business entity must complete and return the following Affidavit of Work Authorization.

Comes now _____ (Name of Business Entity Authorized Representative) as _____ (Position/Title) first being duly sworn on my oath, affirm _____ (Business Entity Name) is enrolled and will continue to participate in the E-Verify federal work authorization program with respect to employees hired after enrollment in the program who are proposed to work in connection with the services related to _____ (Bid/Grant/Subgrant/Contract/Subcontract) for the duration of the grant, subgrant, contractor, or subcontractor, if awarded in accordance with subsection 2 of section 285.530, RSMo. I also affirm that _____ (Business Entity Name) does not and will not knowingly employ a person who is an unauthorized alien in connection with the contracted services related to _____ (Bid/Grant/Subgrant/Contract/Subcontract) for the duration of the grant, subgrant, contract, or subcontract, if awarded.

In Affirmation thereof, the facts stated above are true and correct. (The undersigned understands that false statements made in this filing are subject to the penalties provided under section 575.040, RSMo.)

_____ _____
Authorized Representative's Signature Printed Name

_____ _____
Title Date

Subscribed and sworn to before me this _____ of _____. I am
(DAY) (MONTH, YEAR)

commissioned as a notary public within the County of _____, State of
(NAME OF COUNTY)

_____ and my commission expires on _____.
(NAME OF STATE) (DATE)

_____ _____
Signature of Notary Date

AFFIDAVIT OF WORK AUTHORIZATION
(Continued)

CURRENT BUSINESS ENTITY STATUS

I certify that _____ (Business Entity Name) **MEETS** the definition of a business entity as defined in section 285.525, RSMo pertaining to section 285.530, RSMo as stated above.

_____	_____
Authorized Business Entity Representative's Name (Please Print)	Authorized Business Entity Representative's Signature
_____	_____
Business Entity Name	Date

As a business entity, the grantee, sub grantee, contractor, or subcontractor must perform/provide the following. The grantee, sub grantee, contractor, or subcontractor shall check each to verify completion/submission:

□ Enroll and participate in the E-Verify federal work authorization program (Website: http://www.dhs.gov/e-verify; Phone: 888-464-4218: Email: e-verify@dhs.gov) with respect to the employees hired after enrollment in the program who are proposed to work in connection with the services required herein;

AND

□ Provide documentation affirming said company's/individual's enrollment and participation in the E-Verify federal work authorization program. Documentation shall include a page from the E-Verify Memorandum of Understanding (MOU) listing the grantee's, subgrantee's, contractor's, or subcontractor's name and the MOU signature page completed and signed, at minimum, by the grantee, subgrantee, contractor, or subcontractor and the Department of Homeland Security – Verification Division; (if the signature page of the MOU lists the grantee's, subgrantee's, contractor's, or subcontrator's name, then no additional pages of the MOU must be submitted).

Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MICHAEL L. PARSON, Governor

Annual Wage Order No. 26

Section 050

JEFFERSON COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by
Taylor Burks, Director
Division of Labor Standards

Filed With Secretary of State: **March 8, 2019**

Last Date Objections May Be Filed: **April 8, 2019**

Prepared by Missouri Department of Labor and Industrial Relations

OCCUPATIONAL TITLE	** Date of Increase	Basic Hourly Rates
Asbestos Worker		$60.15
Boilermaker		$21.70*
Bricklayer		$56.61
Carpenter		$54.69
Lather		
Linoleum Layer		
Millwright		
Pile Driver		
Cement Mason		$51.42
Plasterer		
Communications Technician		$53.56
Electrician (Inside Wireman)		$63.89
Electrician Outside Lineman		$63.50
Lineman Operator		
Lineman - Tree Trimmer		
Groundman		
Groundman - Tree Trimmer		
Elevator Constructor		$21.70*
Glazier		$21.70*
Ironworker		$60.46
Laborer		$44.62
General Laborer		
First Semi-Skilled		
Second Semi-Skilled		
Mason		$50.10
Marble Mason		
Marble Finisher		
Terrazzo Worker		
Terrazzo Finisher		
Tile Setter		
Tile Finisher		
Operating Engineer		$60.79
Group I		
Group II		
Group III		
Group III-A		
Group IV		
Group V		
Painter		**$48.30**
Plumber		$67.39
Pipe Fitter		

Roofer		**$50.68**
Sheet Metal Worker		**$66.30**
Sprinkler Fitter		$68.95
Truck Driver		$21.70*
Truck Control Service Driver		
Group I		
Group II		
Group III		
Group IV		

*The Division of Labor Standards received less than 1,000 reportable hours as required by RSMo 290.257.4(b). Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center, in accordance with RSMo 290.257.2.

OCCUPATIONAL TITLE	** Date of Increase	Basic Hourly Rates
Carpenter		$57.18
Millwright		
Pile Driver		
Electrician (Outside Lineman)		$63.50
Lineman Operator		
Lineman - Tree Trimmer		
Groundman		
Groundman - Tree Trimmer		
Laborer		$48.06
General Laborer		
Skilled Laborer		
Operating Engineer		**$61.65**
Group I		
Group II		
Group III		
Group IV		
Truck Driver		$46.73
Truck Control Service Driver		
Group I		
Group II		
Group III		
Group IV		

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received less than 1,000 reportable hours as required by RSMo 290.257.4(b). Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center, in accordance with RSMo 290.257.2.

OVERTIME and HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, **"overtime work"** shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.

ANNUAL WAGE ORDER NO. 26 **3/19**

In Witness thereof, the parties hereto have executed this Agreement, in triplicate, as of this _____ day of _____2017:

_____ **County of Jefferson, State of Missouri**

Company Name

_____ _____

Signature **Kenneth B. Waller County Executive**

_____

Print

Company Address: _____

_____

_____

Phone: _____

I hereby certify under section 50.660 RSMo there is either: (1) a balance of funds, otherwise unencumbered, to the credit of the appropriation to which the obligation contained herein is chargeable, and a cash balance otherwise unencumbered, in the treasury, to the credit of the funds from which payment is to be made, each sufficient to meet the obligation contained herein; or (2) bonds or taxes have been authorized by vote of the people and there is a sufficient unencumbered amount of the bonds yet to be sold or of the taxes levied and yet to be collected to meet the obligation in case there is not a sufficient unencumbered cash balance in the treasury.

_____

County Auditor

APPROVED AS TO FORM

_____

County Counselor

COOPERATIVE BID FORM

Bid Name: _____

INSTRUCTIONS: Bidders **MUST** fill out this form as part of the bidding process and attach to your bid response to Jefferson County, Missouri.

COOPERATIVE PROCUREMENT CONTRACT

This is a cooperating supply contract in accordance with Chapter 130, Section 130.020. K.3., of the Procurement Policy and Procedures, Jefferson County Code of Ordinances.

Will you extend bid prices, cash terms, and all other terms and conditions of any contract resulting from this bid with Jefferson County, Missouri, to any Jefferson County, Missouri, Municipality, government agency, district, sub-district or other tax-supported entity?

Yes _____ No_____

Although agreeing to the extension of the terms of this contract to municipalities or other tax-supported entities, ***is not a prerequisite for award***, Jefferson County, Missouri, may take this factor into consideration if tie bids are received, in addition to the normal Terms and Conditions of the Invitation for Bid, enclosed herewith as a part of this bid.

Bidders are encouraged to extend contract prices to Municipalities and any other tax-supported entities.

If agreeable to the above, state the **minimum** dollar value *per order* you will require from a Municipality or any other tax-supported entity **(this shall not apply to Jefferson County, Missouri Government, Departments or Divisions**):

MINIMUM DOLLAR VALUE PER ORDER: **$_____**

BY: _____

TITLE: _____

COMPANY: _____

CONTACT INFORMATION FOR COOPERATIVE AGREEMENT

Phone_____ E-mail_____

THIS FORM WILL BECOME PART OF THE BID DOCUMENT PACKAGE SUBMITTED TO JEFFERSON COUNTY, MISSOURI

PROJECT BID PACKAGE

Animal Resource Center Remodeling and Addition
Project No. PW20B035BLD

Jefferson County, Missouri
P.O. Box 100
Hillsboro, MO 63050

REQUEST FOR BID

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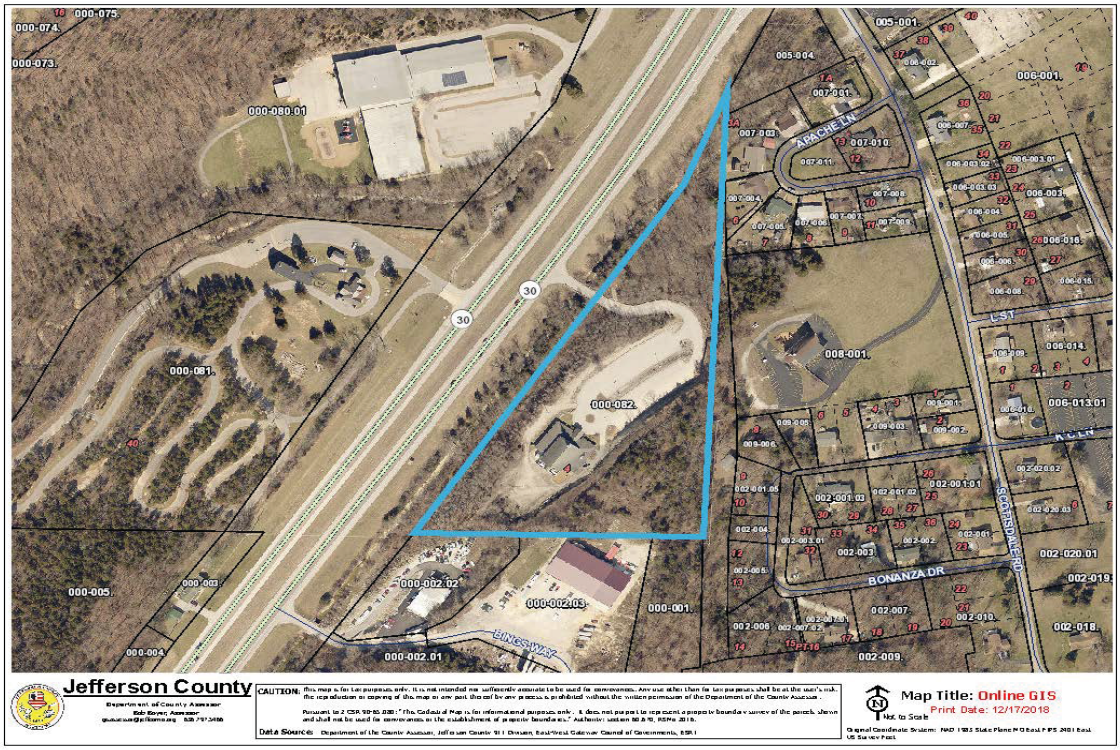
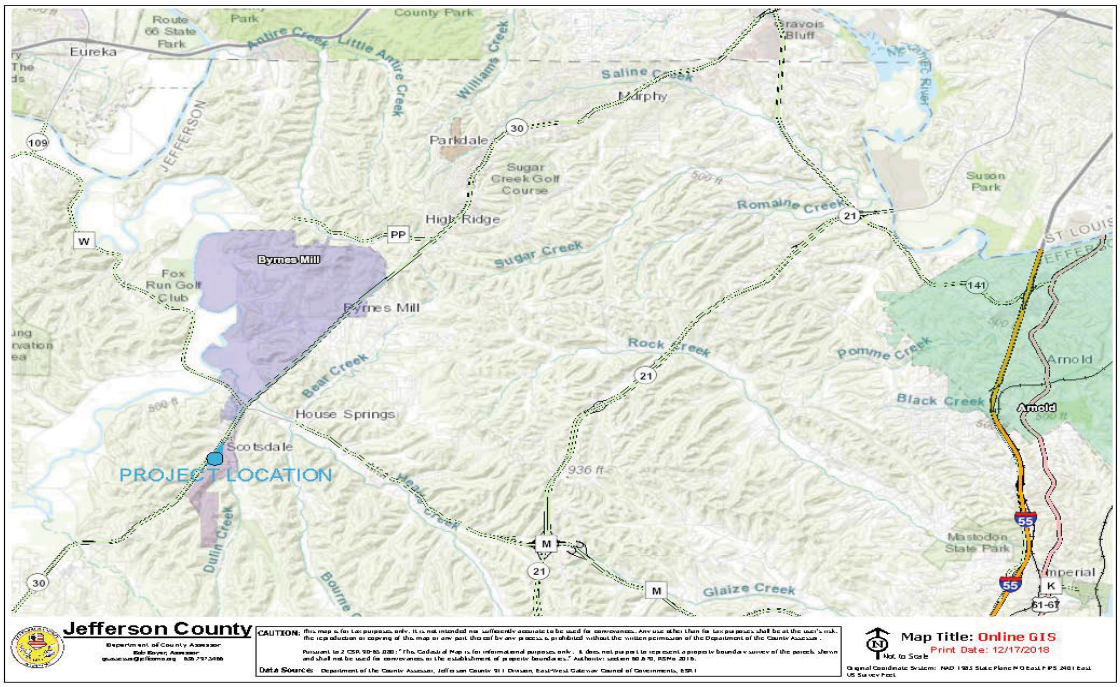
PROJECT LOCATION MAP

Animal Care Facility, 4848 State Route 30, House Springs, Missouri 63051





BID NOTICE

Sealed bids for the Animal Resource Center Remodeling and Addition Project No. PW20B035BLD, will be received at the Jefferson County Clerk Office, 729 Maple Street, Hillsboro, Missouri 63050 until 2:00 o'clock P.M. (CDST) on the Tuesday, June 2, 2020, and at that time will be publicly opened and read. All bids shall be submitted in triplicate in an opaque sealed envelope, marked with the Project title, name and address of the Bidder, and accompanied by the other required documents. Bids submitted via fax or electronic will be rejected. Late Bids will not be accepted and will be returned to the sender, unopened.

The proposed work includes remodeling of the existing 10,800 square foot building, as well as the construction of a 1,500 square foot building addition. Architectural, mechanical, electrical, plumbing, HVAC, structural, IT/telecommunication and civil/site modifications will be made to the building and site. The contractor will be responsible for providing necessary material and labor to complete the project in a timely manner in accordance with the Project Manual, Plan Drawings and other Contract Documents. The contractor will be responsible for arranging delivery of materials to the job site. The bid shall also include disposal of all waste and demolition material. A comprehensive pre-bid meeting will not be possible at this time due to the COVID-19 crisis. Inspections and investigations of the project site can be held by appointment only. Contact Matt Stinchcomb at (636)328-5375 to schedule an onsite visit.

Work shall be in accordance with the Project Manual, Plan Drawings and Contract Documents. Where not specifically covered by these documents, the Contractor shall adhere to the Latest Edition of the, Jefferson County, Missouri Building Code or Town of Scotsdale, Missouri Building Code requirements, whichever governs.

Drawings and specifications for this work will be available, at no cost, as downloadable files from the Jefferson County website (http://www.jeffcomo.org), on or before Friday, April 24, 2020. The bidder will be responsible to check the County's website for addendum(s) regarding this project prior to bid opening.

All labor used in the construction of this public improvement shall be paid a wage no less than the prevailing hourly rate of wages of work of a similar character in this locality as established by the State of Missouri's "Annual Wage Order" that is currently effective 10 calendar days prior to bid opening.

All bids shall be made on the forms provided. The Jefferson County, Missouri hereby reserves the right to reject any or all bids, to waive any informality in the bids received and to accept the bid that in its judgment will be for the best interest of Jefferson County, Missouri.

Contractors and sub-contractors who sign a contract to work on public works projects must provide a 10-Hour OSHA construction safety program, or similar program approved by the Department of Labor and Industrial Relations, to be completed by their on-site employees within sixty (60) days of beginning work on the construction project.

Each bid must be accompanied by a certified check or satisfactory bid bond payable to Jefferson County, Missouri, in the amount of five percent (5%) of the total amount of bid as a guarantee that the successful bidder will enter into a contract and furnish the required bonds within the time period stated in the Project Manual.

PLAN HOLDER CONTACT INFORMATION

All potential bidders should complete this form and submit it to the Jefferson County email address listed below in order to provide contact information as required. All other plan holders may submit this form at their own option. Addendums will be posted on the county website. In the event of disruption of website services, all such information will be communicated to all registered plan holders.

Project: Jefferson County, Missouri
Animal Resource Center
Remodeling and Addition

Project Number: PW20B035BLD

Project Estimates: Base Bid Project $1,449,538.00

Bid Opening Date: June 2, 2020

Company Name: _____

Company Address: _____

_____

Contract Name: _____

Contact Phone: _____

Contact Email: _____

Email Completed Form To: **pwprojects@jeffcomo.org**

INSTRUCTIONS TO BIDDERS AND NOTICE TO CONTRACTORS

(1) PROPOSED WORK: The proposed work includes remodeling of the existing 10,800 square foot building, as well as the construction of a 1,500 square foot building addition. Architectural, mechanical, electrical, plumbing, HVAC, structural, IT/telecommunication and civil/site modifications will be made to the building and site. The contractor will be responsible for providing necessary material and labor to complete the project in a timely manner in accordance with the Project Manual, Plan Drawings and Contract Documents. The contractor will be responsible for arranging delivery of materials to the job site. The bid shall also include disposal of all waste and demolition material.

(2) PLANS AND SPECIFICATIONS: Plan drawings and specifications for this project are available through the Jefferson County, Missouri Government website (www.jeffcomo.org) under the "Invitation for Bids/Request for Proposals" tab in the "Services" box in the upper portion of the homepage. It is the bidder's responsibility to obtain these documents from the provided source, including copies for use in construction. Paper copies of any documents will require advance notice and are subject to administrative fees for labor and material costs. Plans, specifications, and any other contract documents are made available only for the purposes of obtaining bids, and as a resource to the awarded contractor. These documents do not confer a license or grant for any other use.

(3) CONTRACT DOCUMENTS AND SITE CONDITIONS: Before submitting a Bid, each Bidder must; (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize themselves with local conditions that may in any manner affect cost, progress or performance of the Work, (c) familiarize themselves with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; and (d) study and carefully correlate Bidder's observations with the Contract Documents. Each bidder will, at their own expense, make such investigations and tests as the bidder may deem necessary to determine their Bid for the performance of the Work in accordance with the time, price and other terms and conditions of the Contract Documents. On request, the County will provide each bidder access to the site to conduct such investigations and tests, as each bidder deems necessary for submission of his Bid. The property upon which the Work is to be performed is identified in the project specifications or plan drawings.

(4) COMPLIANCE WITH CONTRACT PROVISIONS: The bidder, having examined and being familiar with the local conditions affecting the work, and with the contract, contract documents and the request for bid, including any and all appendices, special provisions, general provisions and plans, hereby proposes to furnish all labor, materials, equipment, services, etc., required for the performance and completion of the work. By submitting this bid, the contractor acknowledges that all specifications, including those that are referenced in the bid documents, shall be specifications of the contract. It shall be conclusively presumed that they are in the bidder's possession, and they have been reviewed and used by the bidder in the preparation of

any bid submitted on this project. All questions about the meaning or intent of the Contract Documents shall be submitted to the County Engineer. Replies will be issued by Addenda, mailed, or electronically delivered to all parties recorded by the County Engineer as having received the Bidding Documents. Oral and other interpretations or clarifications will be without legal effect. The bidder must have completed and submitted the Plan Holder's Contact form to be recorded as having received the Bidding Documents.

(5) SUBCONTRACTORS: No subcontract may be awarded by the prime contractor under this contract to anyone without approval of the County. In order for such approval to be obtained the Contractor shall submit a request to subcontract. This is not required for bid submittal. The proposed subcontractor must also submit, through the Contractor, the following documents in an acceptable form:

a. Copy of any subcontracts, if requested

b. Certification by proposed subcontractor regarding equal employment opportunity;

c. Certification by proposed subcontractor concerning labor standards and prevailing wage requirements;

d. Any such other documents and evidence as the County may reasonably request to show that the subcontractor has fully complied with any reporting requirements to which it is or was subject.

e. Affidavit of Federal Employment Authorization to be completed and turned in by proposed subcontractors.

f. Subcontractor shall have a certificate of insurance with the same limits as the prime contractor listing Jefferson County, Missouri as Additional Insured and as a certified holder. The endorsement is also required.

(6) SALES AND USE TAX EXEMPTION: Jefferson County, Missouri, a tax-exempt entity, will furnish a Missouri Project Exemption Certificate as described in Section 144.062 RSMo to the awarded contractor who in turn may use the certificate to purchase materials for a specific project performed for the tax-exempt entity. Only the materials and supplies incorporated or consumed during the construction of the project are exempt. The certificate will be issued to the contractor for a specific project for a defined period of time.

(7) PERIOD OF PERFORMANCE: If the bid is accepted, the bidder agrees that work shall be diligently prosecuted at such rate and in such manner as, in the judgment of the engineer, is necessary for the completion of the work within the time specified as follows:

Calendar Days: 180

(8) BID GUARANTY: The bidder shall submit a Bid Bond as specified in the Project Manual. The Bid Form provided in this bid package is for information only and may be superseded by any other form required by the chosen financial institution.

(9) LIQUIDATED DAMAGES: The bidder agrees that, should the bidder fail to complete the work in the time specified or such additional time as may be allowed by the engineer under the contract, the amount of liquidated damages to be recovered shall be as follows:

Liquidated damages per day: $ 500

(10) ANTIDISCRIMINATION: The Contracting Authority hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, businesses owned and controlled by socially and economically disadvantaged individuals will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, religion, creed, sex, age, ancestry, or national origin in consideration for an award.

(11) PREVAILING WAGE (STATE ONLY): This contract requires payment of the prevailing hourly rate of wages for each craft or type of worker required to execute the contract as determined by the Missouri Department of Labor and Industrial Relations. The applicable State Wage Rates for this contract are detailed in the "Annual Wage Order" that is effective 10 calendar days prior to bid opening. These supplemental bidding documents have important legal consequences. It shall be conclusively presumed that they are in the bidder's possession, and they have been reviewed and used by the bidder in the preparation of any bid submitted on this project.

(12) WORKER ELIGIBILITY REQUIREMENTS: Execution of the construction contract for this project is dependent upon the awarded bidder providing an Affidavit of Compliance AND E-Verify Memorandum-of-Understanding (MOU) between the bidder and Department of Homeland Security to the Contracting Authority as required by section 285.530 RSMo**. The cover page and signature page of the E-Verify MOU and the Affidavit must be submitted with the bid.**

A sample Affidavit of Compliance can be found at the Missouri Attorney General's website at the following link:

http://ago.mo.gov/forms/Affidavit_of_Compliance.pdf

All bidders must also be enrolled in the E-Verify Program, and include their MOU prior to contract execution. Bidders who are not enrolled will need to go to the following website link and select "Enroll in the Program" to get started. After completing the program, they will receive their E-Verify MOU with Department of Homeland Security. This document will need to be printed out and kept on file so that a copy can be attached to the Affidavit of Compliance.

http://www.dhs.gov/files/programs/gc_1185221678150.shtm
This requirement also applies to subcontractors and contract labor, but this contract only requires submittal of the verification documents for the prime contractor. It is the prime contractor's responsibility to verify the worker eligibility of their subcontractors in order to protect their own company from liability as required by Section 285.530 RSMo.

(13) OSHA TEN HOUR TRAINING REQUIREMENTS: Missouri Law, 292.675 RSMO, requires any awarded contractor and its subcontractor(s) to provide a ten-hour Occupational Safety and Health Animal Resource (OSHA) Construction Safety Program (or a similar program approved by the Missouri Department of Labor and Industrial Relations as a qualified substitute) for their on-site employees (laborers, workmen, drivers, equipment operators, and craftsmen) who have not previously completed such a program and are directly engaged in actual construction of the improvement (or working at a nearby or adjacent facility used for construction of the improvement). The awarded contractor and its subcontractor(s) shall require all such employees to complete this ten-hour program, pursuant to 292.675 RSMO, unless they hold documentation on their prior completion of said program. Penalties, for Non-Compliance include contractor forfeiture to the Contracting Authority in the amount of $2,500, plus $100 per contractor and subcontractor employee for each calendar day such employee is employed beyond the elapsed time period for required program completion under 292.675 RSMO.

(14) ADDENDUM ACKNOWLEDGEMENT: The bidder agrees that all addenda (if applicable) have been received, acknowledged and incorporated into their bid, prior to submittal. For paper bids, staple addenda to the bid in the appropriate part of the bid.

(15) AWARD OF CONTRACT: This project will be awarded to the lowest, responsive, responsible bidder. Per Section 130.060; Part A(3) of the Jefferson County Code of Ordinances, the County Council reserves the right to give preference and award the contract to a contractor based within Jefferson County when the difference in the delivered price is negligible. The Public Works Department defines the term 'negligible' in this section of the Code of Ordinance to mean less that a one-percent (1%) difference in the total bidding price. The County may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the work as to which the identity of Subcontractors and other persons and organizations must be submitted as provided. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by the County. The County may conduct such investigations as they deem necessary to assist in the evaluation of whether any Bid is responsive in accordance with the Contract Documents to the County's satisfaction within the prescribed time. If the contract is to be awarded, the County will give the successful Bidder a Notice of Award within fourth-five days after the date of the Bid opening.

(16) VALUE ENGINEERING CHANGE PROPOSALS (VECPs): A Value Engineering Change Proposal (VECP) shall provide a product of equal or improved quality that will reduce the project cost, improve project functionality or decrease the time required to complete the project. A Practical Design Value Engineering Change Proposal (PDVECP) may provide a product of

lesser value, use an existing item in place or underrun contract items. The PDVECP shall not adversely affect safety or function of the final product. The contractor is encouraged to submit to the County Engineer, in writing, VECP's and PDVECP's for modifying the plans, specifications or other requirements of the contract. Proposed modifications shall not impair, in any manner, essential functions or characteristics of the project, including but not limited to, service life, economy of operation, ease of maintenance, desired appearance, design or safety standards, and shall not significantly delay the completion of the project. Proposals shall be submitted to the County Engineer in advance of the work to be performed with sufficient time allowed for review. The County will not be liable to the contractor for failure to accept or act upon the proposal nor for any delays to the work attributable to any such proposal.

A. Submitting Proposals

Value engineering proposals shall be submitted to the County Engineer and shall contain the following information:

i. A description of both the existing contract requirements for performing the work and the proposed changes.
ii. A detailed estimate of the cost of performing the work under the existing contract and under the proposed change.
iii. A statement of the time within which the County Engineer must make a decision thereon, including the probable effect the proposal will have on the contract completion time.
iv. An itemized list of the contract items of work affected by the proposed changes, including any quantity variation attributable thereto.
v. A description of any previous use or submission of the same proposal by the contractor, including dates, job numbers, results, and/or outcome of proposal if previously submitted.

B. Conditions

The County Engineer will only consider VECP's that meet the following conditions:

i. Contractors may submit value engineering proposals that propose changes in the basic design of a building improvement. Value engineering proposals will be considered only when the proposal will not significantly delay the completion of the project.
ii. The contractor shall continue to perform the work in accordance with the requirements of the contract until a change order incorporating the value engineering proposal has been approved by the County, unless otherwise directed by the County Engineer. If a change order has not been approved by the date upon which the contractor's value engineering proposal specifies that a decision thereon should be made, the proposal shall be deemed rejected, unless the time allowed for a decision has been extended by mutual agreement of both parties.
iii. The County expressly reserves the right to adopt a value engineering proposal as standard practice for use on other contracts administered by the

County. If an accepted value engineering proposal is adopted as design policy, only contractors submitting such a proposal will be eligible for compensation pursuant to this section until the proposal is incorporated into design policy, and in that case, only as to those contracts awarded to the contractor prior to submission of the accepted value engineering proposal. Value engineering proposals identical or similar to previously submitted proposals will be eligible for consideration and compensation under the provisions of this section if the identical or similar previously submitted proposals were not adopted as design policy by the County or included in the present contract. Subject to the provisions contained herein, the County will have the right to use all or any part of any submitted value engineering proposal without obligation or compensation of any kind to the contractor, except as noted in the following subsection.

iv. The contractor may request the return of information submitted with a value engineering proposal if the proposal is rejected, provided this request is in writing and submitted with the proposal. If the proposal is accepted, this request will be void, and the County may use or disclose in whole or in part any information necessary to utilize the proposal.

v. Prior to approval, it may be necessary for the County Engineer to modify a proposal, with the concurrence of the contractor, to make the proposal acceptable. If any modification increases or decreases the net savings resulting from the proposal, the contractor's share will be determined on the basis of the proposal as modified.

vi. An electronic copy of the complete proposal shall be submitted to the County Engineer for review. The contractor may submit a conceptual proposal for approval stating the basic proposal and approximate cost savings in order to provide the contractor with the opportunity to submit an idea without large initial development costs if the proposal is rejected. Approval or disapproval of proposals will be granted within ten days of receipt of the proposal.

vii. A proposal will be disqualified if additional information is not provided at the request of the County Engineer. This will include design computations, field investigations, results, surveys, etc.

viii. Reimbursement for modifications to the proposal to adjust field or other conditions will be limited to the total amount of the contract bid prices. Rejection, limitation or reimbursement shall not be a basis for any claim against the County.

ix. The contractor will have no claim to additional costs or delays, including development costs, loss of anticipated profits, or increased material or labor costs, if the proposal is rejected by the County.

x. The County Engineer will decide whether or not to consider a proposal. The basis for proposal rejections will include excessive review requirements, evaluation or investigation, or if the proposal is inconsistent with project design policies or criteria.

C. Payment

Payment will meet the following conditions:

i. The County Engineer will be the sole judge of the acceptability of a value engineering proposal and of the estimated net difference in construction costs from the adoption of all or any part of such a proposal. The County Engineer may adjust contract prices if, in the judgment of the County Engineer, such prices do not represent a fair measure of the value of work to be performed or to be deleted.

ii. If the contractor's cost reduction is accepted in whole or in part, such acceptance will be by a change order that is finally approved by the County Council. Such change orders will incorporate the changes in the plans and specifications necessary to permit the value engineering proposal or any part of the proposal that has been accepted, to be put into effect, and will include any conditions upon which the County's approval thereof is based, if the approval of the County is conditional. The change order will also set forth the price for performing those items of work affected by the change order and the estimated net savings in the cost of performing the work attributable to the value engineering proposal in the change order, and will further provide that the contractor will be paid 50 percent for VECP's or 25 percent for PDVECP's of the actual net savings of the construction costs at the completion of the work affected by the change order. All reasonable documented engineering costs incurred by the contractor to design and develop a value engineering proposal will be reimbursed and subtracted from the savings of the construction costs. All costs incurred by the County to review and implement the VECP will be at the County's expense.

iii. The amount and time specified in the change order will be considered full compensation to the contractor for the value engineering proposal and for the performance of that work.

iv. Only the contractor may submit proposals and be reimbursed for savings, however the contractor may submit proposals for any approved subcontractor.

GENERAL PROVISIONS

(1) DEFINITIONS: The following terms as used in these Contract Documents are respectively defined as follows:

a) "Owner" – A person, firm, corporation, municipality or Government agency, by which the Contract will be awarded. Wherever the Owner is specified, it shall also be construed to mean Jefferson County, Missouri.

b) "County" – Jefferson County, Missouri

c) "Engineer" – County Engineer, Director of Public Works, or any appointed designee.

d) "Architect" – The architectural firm responsible for the preparation of construction plan drawings and specifications and/or contracted to assist the County with construction phase services.

e) "Contractor" - The person, firm, or corporation to whom the contract is awarded.

f) "Subcontractor" - A person, firm, or corporation, performing any part of the Contractor's obligations hereunder at the site of work excluding, however, the furnishing of standard materials, such as cement, lumber, and other materials not worked to a special design under the plans and specifications for the work.

g) "Contract Documents" – The agreement subscribed by the parties, the Invitation to Bidders, Information for Bidders, the Proposal, the Plan Drawings and Specifications, and the Project Manual.

h) "Work" – The furnishing of all labor, materials, equipment and other incidentals necessary or convenient to the successful completion and carrying out of all duties and obligations of the Contractor under the Contract Documents.

i) "Days" – Except where otherwise specifically provided in the Contract Documents, calendar days includes weekends and holidays.

(2) NOTICE: Unless otherwise specified herein, any notice required under the Contract Documents shall be deemed given if deposited in the United States mail, first class postage prepaid. Notice may also be given by hand delivery to the authorized representative of the Owner.

(3) INTENT OF THE CONTRACT DOCUMENTS: The intention of the Contract Documents is to include in the contract price the cost of all labor, materials, water, fuel, tools, plant, equipment, light, transportation, professional services support and all other expense as may be necessary for the proper execution of the work. In interpreting the

Contract Documents, words describing materials of work which have a well-known technical or trade meaning, unless otherwise specifically defined in the Contract Documents, shall be construed in accordance with such well-known meaning recognized by architects, engineers, and the trade.

The work shall be executed in strict conformity with the plans and specifications. The Contract Documents are complementary and what is called for by any one shall be as binding as if called for by all. Anything stated in the specifications and not shown in the drawings, or shown in the drawings and not stated in the specifications, shall be of like effect as if shown or stated in both.

(4) PLANS / PROJECT SPECIFICATIONS: Unless otherwise provided in the Contract Documents; the Plans, Project Manual and subsequent addendums are available; free of charge, as a downloadable file from the Jefferson County website. The Contractor will be responsible for reproducing the plans necessary to carry out all the work.

In the case of discrepancy in the plans, the matter shall be immediately submitted to the Architect or Owner without whose decision said discrepancy shall not be adjusted by the Contractor, save only at his own risk and expense.

(5) SUPERVISION AND PERSONNEL: The Contractor shall have at the work site at all times a job supervisor. That individual shall be capable of reading and understanding the project plans and specifications, have authority to order materials and equipment and have authority to execute work as directed by the Owner. The Contractor shall provide the name and phone numbers of the person appointed as job supervisor prior to issuance of notice to proceed.

All workers shall have sufficient skill and experience to properly perform the work assigned to them. The owner may demand the dismissal of any person employed by the contractor in, about or upon the work who engages in misconduct, is incompetent or negligent in the due and proper performance of assigned duties, or who neglects or refuses to comply with any proper directions given. Such person shall not again be employed thereon without the written consent of the owner. Should the Contractor continue to employ or re-employ any such person, the Owner may suspend the work until the contractor complies with such orders.

(6) COMPLIANCE WITH LAWS: The Contractor shall comply with all laws, ordinances, rules and regulations bearing in the conduct of the work and shall obtain, at his expense, all permits and licenses necessary for the prosecution of the work. Unless provided for in the contract, or granted a waiver, permits required from other departments of the county shall be obtained by the contractor.

The Contractor shall be responsible for the payment of all Federal, State, municipal or local taxes, including but not limited to sales and use taxes, applicable to the performance

of the contract, and shall indemnify and hold harmless the Owner, from the consequences of his failure to pay such taxes. **Before award, the lowest bidder shall prove that delinquent property taxes are not owed to Jefferson County, MO, by submitting receipt of payment for last 3 years, or a notarized affidavit, on company letterhead, stating that the bidder does not own any real estate or personal property in Jefferson County.** Past receipts can be obtained from http://jeffersonmo.devnetwedge.com. The engineer may require proof that any or all tax liabilities of the contractor are not in a state of delinquency.

A sales tax exemption for construction materials is allowed by RSMo Section 144.062 RSMo, which applies to contractors for the County. If applicable to this contract, Jefferson County will issue an exemption certificate to the contractors, subcontractors, and suppliers for the purchase of materials used in construction.

(7) USE OF JOB SITE: The Contractor shall confine his equipment, apparatus, the storage of materials and operations of his workmen to limits indicated by law, ordinance, permits, easements or plans and shall not encumber the premises with his materials. The Contractor shall not load or permit any part of any structure to be loaded to the extent that its safety may be endangered.

(8) SANITARY PROVISIONS: The Contractor shall provide and maintain a neat, sanitary job site, and accommodations for the use of his employees as may be necessary to comply with the sanitary requirements of laws or ordinances.

(9) SURVEYS: The Contractor shall provide all surveys necessary to the performance of his work. All work shall be done to the lines, grades, and elevations shown on the plans. Any improperly located items, horizontally or vertically, may be subject to removal and replacement at the Contractor's expense. The Owner or Architect may, in his sole discretion, check from time to time the reference marks, lines, grades, and measurements established by the Contractor but his exercise or failure to exercise such right shall not relieve the Contractor of his obligation as stated herein.

(10) CONDITIONS AT THE SITE: The Contractor shall make such investigations of conditions above or below the surface of the ground, as he may deem necessary for the proper and timely performance of his work, including but not limited to the making of borings. No oral representations by any persons respecting such conditions shall in any manner be binding upon the Owner or the Architect.

The Owner may have, for its own use, made borings at or near the site of the work. The boring data, if collected, will be made available to the Contractor, for his own convenience, if he desires to examine it. Any interpretations or conclusions drawn by the Contractor from such data shall be his own and the Owner makes no representation or guaranty concerning the accuracy or completeness of such data.

(11) UTILITIES AND OTHER OBSTRUCTIONS: It shall be the sole responsibility of the Contractor in the performance of the contract to locate and avoid all utilities, other structures, and obstructions whether located below or above the surface of the ground. For that purpose, he shall employ all necessary precautions and methods to prevent damage to utilities, other structures, and obstructions. In the event such damage does occur, the Contractor shall be solely liable therefore and he shall notify the affected utility and Owner immediately, make or have made all necessary repairs and bear the expense thereof and all damage caused thereby. If the Contractor finds he cannot safely work at a location designated in the plans and specifications, either because of utilities, other structures or obstructions that may be damaged, he shall notify the Owner immediately.

Certain information relating to piping and underground utilities and structures, such as gas mains, water mains, and electric duct lines, has been gathered by the Architect for its purposes and has been shown on the plans for the convenience of the Contractor and for such use as he may, at his own risk, desire to make of it. Any interpretations or conclusions drawn by the Contractor from such data on the plans shall be his own and the Owner and the Architect makes no representations or guaranty concerning the accuracy or completeness of such data.

(12) STRUCTURES ENCOUNTERED AND PROTECTION OF LIFE AND PROPERTY: The Contractor shall, at his own expense, support and protect all buildings, bridges, conduits, wires, water pipes, sewers, pavements, curbing, sidewalks, equipment and fixtures of all kinds and all other public or private property that may be encountered or endangered in the execution of the work herein contemplated. He shall replace, repair or to otherwise make good any damage caused to any such property to the satisfaction of the Owner thereof. In the event the Contractor does not perform his obligations under this provision, the Owner reserves the right, at its election, to make good any damage to public or private property caused by the work of the Contractor and the cost thereof shall be borne by the Contractor. In the event the Contractor refuses or fails to pay bills therefore upon presentation, the Owner may pursue any remedies available to it or may deduct the amount thereof from any money that may be due to the Contractor hereunder from time to time.

Throughout the performance of the work, the Contractor shall construct and adequately maintain suitable and safe crossings over the trenches, and such detours as are necessary to care for the public and private traffic. The material excavated from trenches shall be deposited in such manner as shall give as little inconvenience as possible to the traveling public, to adjoining property owners, to other contractors or to the Owner.

All disturbed areas, material stockpiles, and equipment staging areas, shall be protected from erosion. All receiving streams and waterways shall be protected from siltation, pollutants, or any other material considered to be hazardous by any governmental

regulator of streams and waterways. Crossings shall be installed for the passage of equipment across any stream or waterway, and allow free passage of water and aquatic life beneath the crossing. The crossing type shall be approved by the Engineer prior to installation. Unless otherwise listed as a bid item or incidental to another bid item, the contractor shall satisfy this requirement at his own expense.

The Contractor at his own expense shall provide the necessary watchmen and sufficient warning lights and barricades and take such other precautions as are necessary to protect life and property. The Contractor shall provide watchmen or additional watchmen at any point where they may be requested by the proper official of any municipality or governmental body affected. Nothing in this section shall be construed as requiring the Contractor to provide a road patrol.

(13) **PROTECTION OF WORK:** The Contractor shall provide proper facilities, take all necessary precautions and assume the entire cost of protecting the work against adverse weather conditions and for handling all storm and flood water, sewage, seepage, ice or snow that may be encountered during the performance of the contract and the manner for providing for such contingencies and for carrying on the work in freezing weather shall meet with the approval of the Owner. If the Contractor shall fail to provide such protection or in the event of emergencies, the Owner may provide such protection at the Contractor's expense.

The contractor assumes all risk of damage to or destruction of the work covered by this contract until the work is completed and accepted by the Owner and shall repair or replace at his expense any work damaged or destroyed prior to such completion and acceptance regardless of cause.

(14) **ACCIDENT PREVENTION:** Precaution shall be exercised at all times for the protection of persons (including employees) and property. The safety provisions of applicable laws and building and construction codes shall be observed. All persons on the site shall have completed, and have the ability to present proof of, a minimum of 10-hour OSHA construction safety training, or another comparable program.

(15) **BLASTING:** The Contractor shall comply with all Federal, State, County and municipal laws, rules, and regulations applicable to the transportation, storage or use of explosives. The Contractor shall assume all responsibility for any injury or damage that may be done during the transportation, storage or use of any explosives.

(16) **OTHER CONTRACTS:** The Owner may award other contracts for additional work, and the Contractor shall fully cooperate with such other contractors, and carefully schedule and fit his own work to that work provided under the other contract. The Contractor shall not commit or permit any act, which will interfere with the performance of work by any other contractor. It shall be at the sole discretion, and not to be assumed as a guarantee to the

contractor, for the engineer to determine if conflicting, overlapping, or neighboring activities, was the sole cause of an unintended delay in the contractor's work schedule.

(17) CUTTING AND PATCHING: The Contractor shall do all cutting, fitting, or patching of his work that may be required to make its several parts connect with the work of other contractors shown upon, or reasonably implied by the plans and specifications. The Contractor shall not endanger any work by cutting, digging, or otherwise, and shall not cut or alter the work of any other contractor.

(18) CLEANING UP: The Contractor shall at all times keep the premises free from accumulation of waste material of rubbish and at the completion of the work shall remove from and about the site all his rubbish, tools, equipment, scaffolding and surplus materials and shall leave his work clean and ready for use.

(19) SURVEILLANCE AND INSPECTION: The Contractor shall provide safe, sufficient and proper facilities at all times for the surveillance of work by the Architect, the Owner, or any other governmental agency that has the right of entry. The Contractor shall, within 24 hours after receiving written notice from the Owner, proceed to remove all materials rejected by the Owner, whether worked or unworked, and take down all portions of the work, which shall be considered as unsound or improper, or in any way failing to conform to the plans and specifications.

Should it be considered necessary or advisable by the Owner at any time before acceptance of the entire work to make an examination of work already completed by removing or tearing out same, the Contractor shall, on written request, promptly furnish all necessary facilities, labor, and material for that purpose. If such work is found to be defective or nonconforming in any material respect, due to the fault of the Contractor or his subcontractors, he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, an equitable adjustment shall be made in the contract price to compensate the Contractor for the additional services involved in such examination and reconstruction and, if completion of the work has been delayed thereby, he shall, in addition, be granted a suitable extension of time.

Unless otherwise provided in this contract, acceptance by the Owner will be made as promptly as practicable after completion of all work required by this contract. Acceptance shall be final and conclusive except as regards latent defects, fraud, or gross mistakes as may amount to fraud, or as regards the Owner’s rights under any warranty or guarantee. Acceptance by the Owner may be contingent upon the acceptance by other governmental bodies.

(20) MATERIALS AND WORKMANSHIP: Unless otherwise stipulated in the specifications, all workmanship, equipment, materials and articles incorporated in the work

covered by this contract are to be new and of the best grade of their respective kinds for the purpose. When required by the plans and specifications, the Contractor shall furnish the Owner or Architect, for approval, certified copies of test results made of the materials or articles, which he contemplates incorporating in the work. Shop Drawings and/or samples of materials shall be submitted for approval when so directed. Machinery, equipment, materials and articles installed or used without such approval shall be at the risk of subsequent rejection. If not otherwise provided, material or work called for in this contract shall be furnished and performed in accordance with established practice and standards recognized by engineers and state transportation officials.

(21) <u>COOPERATION WITH UTILITIES:</u> All utility facilities and appurtenances, within the project limits, shall be located, or relocated, by the utility owner, unless otherwise specified. Locations of these utilities will be provided by the utility owners, or their provided third party, and may not be exact, particularly with regard to underground installations. The contractor shall use the Missouri One-Call System to satisfy this requirement.

The contractor shall lead the efforts to coordinate with utility owners and the engineer in the location and relocation of utility facilities, to minimize effects of the contractor's work, interruption to utility service, or duplication of work by the utility owners. Facilities or appurtenances that are to remain in place during construction shall be accounted for, and protected by the contractor's work procedures.

In the event, utility services are interrupted, and as a result of damage within the project limits, the contractor shall notify the appropriate utility authorities immediately, and cooperate with the utility owners until service has been restored. Work shall not begin around fire hydrants until provisions for continued service have been made and approved by the local fire authority. When the failure of the owners of utility facilities to cooperate and coordinate their work with that of the contractor results in actual delay to the contractor in the overall completion of the contractor's work, such delay will be considered in the count of working days or date specified for completion as contractor's sole compensation from the County, provided the contractor notified the engineer in writing of the delay at the time the delay occurred.

The contractor shall use every precaution to prevent damage to all public and private utilities. Repairs to damaged utilities caused by negligent or wrongful acts or omissions on the part of the contractor shall be corrected at the contractor's expense. Damaged facilities shall be restored to a condition similar or equal to that existing before the damage occurred. The utility will designate who shall repair the damaged facility and the contractor shall not make repairs without utility approval.

Should there be located, within the right of way any public or private utility, facilities that are to remain in place, and which will interfere with the contractor's proposed methods of operation, the contractor, in cooperation with the engineer, shall make all necessary

arrangements with the owner for any temporary or permanent removal or relocation of such facilities desired for the contractor's convenience. Any cost involved shall be at the contractor's expense.

If utility facilities or appurtenances are found that are not noted in the contract, the Engineer shall be notified in writing as soon as possible of the conflict and will determine whether relocation of the utility is necessary to accommodate construction. If relocation is necessary, the contractor will make the necessary arrangements with the utility owner. Compensation for the relocation of utilities will be worked out between the County and the utility owner prior to the relocation of any utility. No compensation will be provided to the contractor for coordinating the location and/or relocation of utilities.

(22) **"OR EQUAL CLAUSE":** Whenever, in these specifications or in any of the Contract Documents, any article, appliance, device or material is designated by a manufacturer's or vendor's or proprietary or trade name and such words are not followed by the condition "or equal", it shall be deemed that the words "or equal" do follow such designation unless the text clearly requires a contrary interpretation. Any article or material equaling the standards fixed may be used in place of that specifically mentioned by the specifications, provided that the material proposed is first submitted to and approved by the Owner or Architect. If by reason of the unavailability of material or equipment, a substitute item of material or equipment is approved by the Owner or Architect, the Owner shall receive the benefit of any economy resulting from the substitution.

(23) **SUBLETTING OR ASSIGNING THE CONTRACT:** The bidder is specifically advised that any person, firm, or another party, to whom it is proposed to award a subcontract under this contract, must be acceptable to the County. Second tier subcontracting will not be permitted on this project. It will be the responsibility of the Contractor to ensure that his subcontractors do not, in turn, subcontract any portion of the work. The Contractor shall furnish to the County a signed copy of all subcontracts at or before the pre-construction meeting. This applies to Federal and local projects.

(24) **WARRANTIES AND GUARANTEES:** Clauses that require the contractor to guarantee materials and workmanship and otherwise maintain the work for a specified period after satisfactory completion and final acceptance will not be approved. This is not even permissible as a non-participating bid item.

Routine warranties or guarantees provided by a manufacturer are valid. Contractors' warranties or guarantees providing for satisfactory in-service operation of mechanical and electrical equipment and relates components for a period not to exceed six (6) months following project acceptance are permissible

(25) **MATERIAL TESTING:** All project sampling and testing of materials shall be performed by the County or by a testing firm contracted by the County. The Contractor shall assure that representatives of the County, testing firm contracted by the County, has the opportunity to sample and test materials used on this project. Costs associated with providing the sample materials shall be incidental to the cost of the project.

(26) **TRAFFIC CONTROL:** All contractor operations, whether within the contract or incidental, shall adhere to the Federal Highway Administration's Manual On Uniform Traffic Control Devices (MUTCD 2009 including revision 1 and 2, May 2012). Unless otherwise listed as a bid item or incidental to another bid item, the contractor shall satisfy this requirement at his own expense.

(27) **STORM WATER POLLUTION PREVENTION PLAN (SWPPP):** The County's Storm Water Pollution Prevention Plan shall be the "Erosion and Sediment Control/Stormwater Management Design Manual" Chapter 505, Jefferson County Code of Ordinances**.** The ordinance can be found at the web address http://www.ecode360.com/JE3328.

For projects without a drawing showing erosion and sediment control measures, the Engineer or his representative will direct what measures are to be used and where they will be placed. Any measures not covered by a pay item or not specifically addressed in the Plans or Specifications as incidental will be by negotiated price. Concrete wash down pits shall be utilized for the washing of all concrete trucks. The pits shall be of adequate size to handle all wash down water. The pits shall be lined with a plastic liner (10 mil minimum) to prevent the seepage of the water into the adjoining ground. Berms may be necessary to prevent the migration of any splash water into the streams. The hardened waste from the wash down pits shall be removed and broken into pieces no larger than one cubic foot. The waste concrete pieces may be used as revetment, but will not be considered in measurement for payment. The cost of the wash down pits, berms, and disposal shall be incidental to the cost of the concrete.

Contractors shall provide the proper equipment, materials, and labor to perform dewatering measures for all drilling, saw cutting, or any other activity that can result in the creation of drilling "Slurry." Contractors shall submit a dewatering plan at the request of the Engineer. Dewatering activity costs shall be incidental to other items in the contract. Any spillage of hazardous waste shall be cleaned up by the Contractor at no additional cost to the Owner. Measures shall be taken to ensure that no hazardous waste reaches a stream or adjoining property.

Any fines assessed for not following the SWPPP will be the sole responsibility of the Contractor. If the Owner is fined by a State or Federal agency, liquidated damages in the amount of the fine will be charged to the Contractor by the Owner. Contractor agrees that it shall remit payment for said liquidated damages immediately upon request by Owner. Failure to do so may, at the Owner's option, be considered a breach of contract thereby

entitling Owner to such other damages as may result. These damages shall be in addition to the liquidated damages described in this paragraph.

(28) **SCHEDULE AND PROGRESS REPORTS:** The Contractor shall, as stated and required in the Contract Documents, submit to the Owner a project work schedule, covering all major operations in the work, for the County's review and approval. At the request of the Owner, the diagram shall be updated for relevancy to actual progress.

(29) **TIME OF COMPLETION AND LIQUIDATED DAMAGES:** The parties recognize that time is of the essence of this contract and, after the Contractor receives a notice to proceed from the Owner, the work to be performed hereunder shall be commenced and shall be completed within the respective number of calendar days specified in the Contract Documents.

If the Contractor fails to complete the work within the time specified, or any extension thereof granted hereunder, the Contractor should pay the Owner the sum specified in the Contract Documents for each day the Contractor is in default. It is agreed that said daily sum is to be paid, not as a penalty, but as compensation to the Owner as liquidated damages for a loss which the Owner will suffer because of such default through increased administrative and engineering costs and other tangible and intangible costs. Such damages may be at the Owner's option, be deducted from any monies held by it which are payable to the Contractor.

The completion of the work included under this Contract is defined for purposes of determining liquidated damages, as that time when all of the structures and appurtenances have been completed and tested and are, in the opinion of the Owner, ready for continuous permanent use and occupancy for the purposes intended, which includes all grading, cleaning up, or other minor work which is required to provide a completed project in accordance with the plans and specifications. At the Owner's discretion, unreasonable response time in the preparation and submittal of any required paperwork may also justify charging of working days or liquidated damages compensation. The date that liquidated damages are no longer applicable shall be the date of final acceptance from the Owner to the Contractor.

(30) **PAYMENTS:** The Contractor, shall receive as full compensation for all accepted work hereunder, a sum equal to the value of the work done based on his proposal, attached hereto and made a part of this contract.

Payment shall be made to the contractor once per month, upon agreement and approval of the contractor submitted pay request. By the 15th calendar day of each month, the Contractor shall submit to the Owner, a pay estimate, in AIA standard format, showing the dollar amount requested for each line item represented in the contract. The engineer may request additional, or alternate invoicing requirements, depending on the structure of the

original bid. The final payment shall be paid to the Contractor, subject to final acceptance of construction and approval of the final change order, within 30 days after completion and acceptance of the entire work herein be contracted for, and upon receipt by the County, and approval of, all final documentation. Final documentation shall include, but not be limited to:

a. Affidavit, compliance with the prevailing wage law;

b. Contractor's certification regarding the settlement of claims;

c. Contractor's Final Pay Estimate;
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d. Letter from contractor stating the total amount paid (final contract amount) for completion of the project;

e. Contractor's Final Lien Waiver and Final Lien Waivers from all subcontractors. The Engineer may request proof of payment to material suppliers, and which point, the contractor shall provide this information;

f. Any certified payroll forms that had not been previously submitted;

g. Certifications for materials, where required per Contract Documents;

(31) **PAYMENTS NO EVIDENCE OF PERFORMANCE:** No certificate for payment made under this contract except the final certificate of final payment, shall be evidence of the performance of this contract, either wholly or in part. No Payment shall be construed to be an acceptance of defective work or improper materials.

BID FORM

TO: JEFFERSON COUNTY, MISSOURI

BID FOR: ANIMAL RESOURCE CENTER REMODELING AND ADDITION
PROJECT NO. PW20B035BLD

1. The undersigned BIDDER proposes and agrees, if this BID is accepted, to enter into an Agreement with the County in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.

2. BIDDER accepts all terms and conditions of the Instructions to Bidders, Notice to Contractors and Project Manual specifications. This Bid will remain open for sixty (60) days after the day of Bid opening. BIDDER will sign the Agreement and submit all documents required within fifteen (15) days after the COUNTY'S Notice of Award.

3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:

(a) BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary; and

(b) This Bid is genuine and not made in the interest of or on behalf on any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or a corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for himself any advantage over any other Bidder or over the County.

4. Bidder will complete project for the following lump sum bid amount. It is understood that this amount represents all work that is necessary to execute all requirements of the Contract Documents.

ANIMAL RESOURCE CENTER REMODELING AND ADDITION – PW20B035BLD

Total Lump Sum Bid Cost **$_____**

5. BIDDER agrees that the work will be completed within the calendar days assigned or the CONTRACTOR shall pay the COUNTY, not as a penalty but as liquidated damages, a sum equal to Five Hundred Dollars ($500.00) for each calendar day (excluding Saturdays, Sundays and Legal Holidays) elapsing between the expiration of such time limit plus such extensions as may be necessary to cover contingencies beyond the CONTRACTOR'S control and the date of the full completion. The County reserves the right to negotiate additional terms for the time of completion with the successful bidder.

6. Communications concerning this Bid shall be addressed to the following:

Address: _____

_____

7. The terms used in this Bid which are defined in the Project Manual of the Construction Contract included as part of the Contract Documents have the meanings assigned to them in the Project Manual.

8. BIDDER has examined copies of all the Contract Documents and of the following addenda:

Date:	Number:
_____	_____
_____	_____
_____	_____
_____	_____

(receipts of all of which is hereby acknowledged) and also copies of the Bid Notice and the Instructions to Bidders:

9. Signatures:

SUBMITTED on _____, 20_____

By_____
(Corporation Name)

_____
(State of incorporation)

By_____
(Name of person authorized to sign) (Signature and typed)

_____
(Title)

(Corporate Seal)

Attest_____
(Secretary) (Signature and typed)

Business Address:_____

_____

_____

Phone No.:_____

BID BOND

Suitable bid security in the amount of:

_____

($_____) Dollars and equal to five (5%) percent as called for in the advertisement for bids which accompanies this proposal. This sum is to be forfeited to the County of Jefferson if the party or parties making the proposal fail to enter into a contract with the approved securities within fifteen (15) days after the Notice of Award has been made. The undersigned has examined the Plans and Specifications for the work to be done and has satisfied himself as to the work to be done and the conditions under which it must be carried out.

The Contractor shall commence work within ten (10) days after the date of a written Notice to Proceed from the County and shall fully complete all work under this proposal within the scheduled time established by the Contract Documents. This proposal shall be equally binding to all heirs, administrators, executors, successors and assigns.

FIRM NAME: _____

BY: _____

TITLE: _____

ATTEST: _____

TITLE: _____

ADDRESS: _____

_____

TELEPHONE: _____

*** THIS PAGE IS AN EXAMPLE – BIDDER IS FREE TO USE A DIFFERENT FORM ***

AGREEMENT FORM

THIS AGREEMENT is dated as of _____, in the year 2020 by and between JEFFERSON COUNTY, MISSOURI (hereinafter called OWNER OR COUNTY) and _____. (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth and in the amount of _____, agree as follows:

ARTICLE 1. WORK

CONTRACTOR shall complete all work as specified or indicated in the Contract Documents for the **Animal Resource Center Remodeling and Addition**. The work is generally described as follows:

The proposed work includes remodeling of the existing 10,800 square foot building, as well as the construction of a 1,500 square foot building addition. Architectural, mechanical, electrical, plumbing, HVAC, structural, IT/telecommunication and civil/site modifications will be made to the building and site. The contractor will be responsible for providing necessary material and labor to complete the project in a timely manner in accordance with the Project Manual, Plan Drawings and Contract Documents. The contractor will be responsible for arranging delivery of materials to the job site. The bid shall also include disposal of all waste and demolition material.

ARTICLE 2. ENGINEER

The County has designated the Director of Public Works, who is hereinafter called ENGINEER and who has the authority assigned to OWNER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 3. CONTRACT TIME

3.1 **The County will issue a notice to proceed for purchasing materials to the**

CONTRACTOR 20 days before the notice to proceed with the work on site. The Contractor shall register their company as well as subcontractors with the Town of Scotsdale, Missouri if required by the City's permitting process. The Contractor will be responsible for any building construction permits required from the Town of Scotsdale, Missouri. The Contractor will begin work on site and will continuously prosecute the work to the completion of the project. Allowance will be made for weather conditions and other occurrences beyond the control of the CONTRACTOR. **All work on the project shall be substantially completed in 180 calendar days.**

If the CONTRACTOR is unable to begin work as required, the ENGINEER shall be notified in writing. Unless the ENGINEER gives written approval for a delay in beginning the work, calendar days will begin to be counted for liquidated damages. The count will continue until the CONTRACTOR begins full operation. The count will resume when work is suspended, or full operation is not maintained.

3.2 Liquidated Damages. The Contractor agrees that should they fail to complete work in the time specified or such additional time as may be allowed by the Owner under this contract, the Contractor shall pay the County, not as a penalty but as **liquidated damages**, a sum equal to **Five Hundred dollars and zero cents ($500.00)** for each calendar day (excluding Saturdays, Sundays and Legal Holidays) elapsing between the expiration of such time limit plus such extensions as may be necessary to cover contingencies beyond the CONTRACTOR'S control and the date of the full completion.

ARTICLE 4. CONTRACT PRICE

44.1 Owner shall pay Contractor for performance of the work in accordance with the contract documents in current funds.

ANIMAL RESOURCE CENTER REMODELING AND ADDITION – PW20B035BLD

Total Lump Sum Bid Cost **$_____**

4.2 All costs associated with contractor licensing to the Town of Scotsdale, Missouri need to be included in the cost estimates above.

ARTICLE 5. PAYMENT PROCEDURE

5.0 Contractor shall submit applications for payment no more than once monthly. The Engineer will process applications for payment. The Contractor shall utilize the Application and Certification for Payment, AIA Document G702, or comparable document for all Applications of Payment.

5.1 Progress Payment. Owner will make progress payments per the Contract Bid Price on the basis of the Contractor's Application of Payment as recommended by the Engineer, on or about the First day of each month during the construction as provided below. All progress payments will be on the basis of the Work measured on the job site according to unit of measurement as shown within the job special provisions or Missouri Standard Specifications.

5.1.1 The Owner will require withholding a ten percent (10%) retainage. Release of retained percentage shall be upon the mutually agreed completion of the project.

5.1.2 When the Contractor receives any payment from the Owner, the Contractor shall make prompt payment to subcontractors and suppliers.

5.2 Final Payment. Upon final completion and acceptance of the Work in accordance with specifications detailed, the Owner shall pay the remainder of the Contract Price as recommended by the ENGINEER.

ARTICLE 6. CONTRACTOR'S REPRESENTATIONS

In order to induce the County to enter into this Agreement CONTRACTOR makes the following representations:

6.1 CONTRACTOR has familiarized himself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions and federal laws, state and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.

6.2 CONTRACTOR has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site of otherwise affecting cost, progress or performance of the Work which were relied upon by the ENGINEER in the preparation of the Drawings and Specifications. When the information is available it will either be included in the bid documents or made available at the Jefferson County Public Works Department for the Contractor's review.

6.3 CONTRACTOR has made or caused to be made examinations, investigations and tests and studies of such reports and related data in addition to those referred to in Article 9 as he deems necessary for the performance of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract documents; and no additional

examinations, investigations, tests, reports or similar data will be required by CONTRACTOR for such purposes.

6.4 CONTRACTOR has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.

6.5 CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

ARTICLE 7. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR are attached to this Agreement, made a part hereof and consists of the following:

7.1 This Agreement

7.2 Exhibits to this Agreement (if any)

7.3 Notice of Award

7.4 Specifications and drawings for Animal Resource Center Remodeling and Addition Project No. PW20B035BLD and consisting of all pages as listed in the table of contents thereof.

7.5 Addenda numbers ___ to __, inclusive.

7.6 CONTRACTOR'S Bid and all attachments

7.7 Documentation submitted by CONTRACTOR prior to Notice of Award

7.8 Any Modification, including Change Orders, duly delivered after execution of agreement.

There are no Contract Documents other than those listed above in this Article 7. The Contract Documents may only be altered, amended or repealed by a Modification (as defined in Article 25 of the General Conditions).

ARTICLE 8. MISCELLANEOUS

8.1 Terms used in this Agreement which are defined in the Project Manual shall have the meanings indicated in the Project Manual.

8.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

8.3 The County and CONTRACTOR each binds himself, his partners, successors, assigns and legal representatives to the other party hereto, his partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

ARTICLE 9. OTHER PROVISIONS

9.1 Access to records. In connection with this Contract the County shall have access to any books, documents, papers, and records of the CONTRACTOR, which are directly pertinent to this project for the purpose of making an audit, examination, excerpts, and transcriptions.

9.2 Applicable Laws and Regulations. The CONTRACTOR expressly agrees to comply with all applicable rules and regulations as set forth in the Contract Documents or as may be required by law, and further agrees to submit all certifications, notices, and affirmative action plans as may now or hereafter be required, and to place such conditions and provisions in any and all subcontracts as may be required.

9.3 Conflict of Interest. The CONTRACTOR covenants that he or she presently has not interest of any kind and shall not acquire any type of interest, direct or indirect, in the program or any property therein, which would conflict in any manner or degree with the performance of his or her services and obligation hereunder. The CONTRACTOR further covenants that in the performance of this contract, no person known to have any conflicting interest shall be knowingly employed in the performance of this Contract.

ARTICLE 10. VENUE

10.1 It is agreed by the parties that any action at law, suit in equity, or other judicial proceeding to enforce or construe this Agreement, or regarding its alleged breach, shall be instituted only in the Circuit Court of Jefferson County, Missouri.

IN WITNESS WHEREOF, the parties hereto have signed this agreement in quadruplicate. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

FOR: JEFFERSON COUNTY, MISSOURI

BY: _____ Date: _____
COUNTY EXECUTIVE

ATTEST: _____ _____
COUNTY CLERK DEPUTY CLERK

FOR: _____

BY: _____ Date: _____
CONTRACTOR

ATTEST: _____

I hereby certify under section 50.660 RSMo there is either: (1) a balance of funds, otherwise unencumbered, to the credit of the appropriation to which the obligation contained herein is chargeable, and a cash balance otherwise unencumbered, in the treasury, to the credit of the funds from which payment is to be made, each sufficient to meet the obligation contained herein; or (2) bonds or taxes have been authorized by vote of the people and there is a sufficient unencumbered amount of the bonds yet to be sold or of the taxes levied and yet to be collected to meet the obligation in case there is not a sufficient unencumbered cash balance in the treasury.

_____
COUNTY AUDITOR

APPROVED AS TO FORM

_____
COUNTY COUNSELOR

AFFIDAVIT COMPLIANCE WITH THE PREVAILING WAGE LAW

Before me, the undersigned Notary Public, in and for the County of_____, State of _____, personally came and appeared_____
(Name)

_____of_____
(Title) (Company Name)

(a corporation)(a partnership)(a proprietorship) and after being duly sworn did depose and say that all provisions and requirements set out in Chapter 290, Sections 290.210 through and including 290.340, Missouri Revised Statutes, pertaining to the payment of wages to workers employed on public works projects have been fully satisfied and there has been no exception to the full and complete compliance with said provisions and requirements with Wage Determination No._____ or Annual Wage Order No._____ issued by the Division of Labor Standards on project_____,
(Job Number)

_____,
(Route or location, if building construction)

_____ County, Missouri, and completed on the ____ day of _____, 20___.

_____
Signature

Subscribed and sworn to me this ____ day of _____, 20____.

My commission expires _____, 20_____.

Notary Public

ACKNOWLEDGEMENT OF REQUIREMENTS AND SPECIFICATIONS WITHIN THE PROJECT MANUAL

I, _____, do hereby sign and acknowledge that myself, or company
FIRST & LAST NAME

staff that work under my oversight, have reviewed all sections and pages of the following Project Documents for the Animal Resource Center Remodeling and Addition Project. By signing this acknowledgement form, the bid submitted by _____, is believed
BIDDING COMPANY NAME

to be compliant with the requirements and specifications stated in the Project Manual and Project Drawings included within this bid package.

Project Manual for the

ANIMAL RESOURCE CENTER
Remodeling & Addition

Jefferson County, Missouri
PW 20B035 BLD

Public Works Director:
Jason Jonas, P.E.

Architect:
Steven J. Bacon;
Bacon Commercial Design LLC
PO Box 605/100-A Bailey Road
Crystal City, Missouri 63019
(636) 933-0007

MEP Engineer:
Dynamic Engineered Systems
797 West Terra Lane
O'Fallon, Missouri 63366
(636)385-6800

Structural/Civil Engineer:
Vonarx Engineering
10785 Business 21; Suite A
Hillsboro, Missouri 63050
(636) 797-8425

Issue Date: 4/15/2020
project number: 19-071

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AWO 26 MISSOURI PREVAILING WAGE ANNUAL ORDER 4

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STEVEN J BACON; MISSOURI REGISTERED ARCHITECT #7402

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PATRICK A O'BRIEN; MISSOURI PROFESSIONAL ENGINEER #25069

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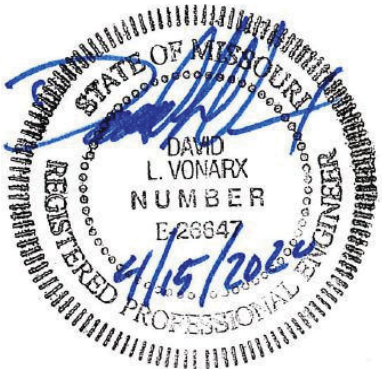
SEAL PAGE: STRUCTURAL & CIVIL SITE DESIGN

DAVID L VONARX; MISSOURI PROFESSIONAL ENGINEER #26647



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Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MICHAEL L. PARSON, Governor

Annual Wage Order No. 26

Section 050
JEFFERSON COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by
Taylor Burks, Director
Division of Labor Standards

Filed With Secretary of State: **March 8, 2019**

Last Date Objections May Be Filed: **April 8, 2019**

Prepared by Missouri Department of Labor and Industrial Relations

OCCUPATIONAL TITLE	** Date of Increase	Basic Hourly Rates
Asbestos Worker		$60.15
Boilermaker		$21.70*
Bricklayer		$56.61
Carpenter		$54.69
Lather		
Linoleum Layer		
Millwright		
Pile Driver		
Cement Mason		$51.42
Plasterer		
Communications Technician		$53.56
Electrician (Inside Wireman)		$63.89
Electrician Outside Lineman		$63.50
Lineman Operator		
Lineman - Tree Trimmer		
Groundman		
Groundman - Tree Trimmer		
Elevator Constructor		$21.70*
Glazier		$21.70*
Ironworker		$60.46
Laborer		$44.62
General Laborer		
First Semi-Skilled		
Second Semi-Skilled		
Mason		$50.10
Marble Mason		
Marble Finisher		
Terrazzo Worker		
Terrazzo Finisher		
Tile Setter		
Tile Finisher		
Operating Engineer		$60.79
Group I		
Group II		
Group III		
Group III-A		
Group IV		
Group V		
Painter		**$48.30**
Plumber		$67.39
Pipe Fitter		
Roofer		**$50.68**
Sheet Metal Worker		**$66.30**
Sprinkler Fitter		$68.95
Truck Driver		$21.70*
Truck Control Service Driver		
Group I		
Group II		
Group III		
Group IV		

*The Division of Labor Standards received less than 1,000 reportable hours as required by RSMo 290.257.4(b). Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center, in accordance with RSMo 290.257.2.

OCCUPATIONAL TITLE	** Date of Increase	Basic Hourly Rates
Carpenter		$57.18
Millwright		
Pile Driver		
Electrician (Outside Lineman)		$63.50
Lineman Operator		
Lineman - Tree Trimmer		
Groundman		
Groundman - Tree Trimmer		
Laborer		$48.06
General Laborer		
Skilled Laborer		
Operating Engineer		**$61.65**
Group I		
Group II		
Group III		
Group IV		
Truck Driver		$46.73
Truck Control Service Driver		
Group I		
Group II		
Group III		
Group IV		

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received less than 1,000 reportable hours as required by RSMo 290.257.4(b). Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center, in accordance with RSMo 290.257.2.

OVERTIME
and
HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, **"overtime work"** shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and
December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.

SECTION 00 0102

PROJECT INFORMATION

PART 1 GENERAL

1.01 PROJECT IDENTIFICATION

A. Project Name: Jefferson County Animal Resource Center, located at 4848 State Route 30; Scotsdale (Jefferson County), Missouri 63051.

B. Owner's Project Number: PW20B035BLD

C. The Owner, hereinafter referred to as Owner: County of Jefferson; County Services & Code Enforcement Dept

D. Owner's Project Manager: Architect.

1.02 PROJECT DESCRIPTION

A. Summary Project Description: Remodel and Addition to Building for a New Animal Resource Center.

B. Contract Scope: Construction, demolition, and renovation.

C. Contract Terms: Lump sum (fixed price, stipulated sum).

D. The selected general contractor shall comply with Missouri Department of Labor's Prevailing Wage Order #26 for Jefferson Couny in all respects, including the paying, reporting of wages, cooperation with Owner representatives in periodic surveys of workers on site, and filing of affidavits of compliance at the conclusion of the work.

1.03 PROJECT CONSULTANTS

A. The Architect, hereinafter referred to as Architect: Bacon Commercial Design LLC.
   1. Address: PO Box 605 / 100-A Bailey Road.
   2. City, State, Zip: Crystal City, MO 63019.
   3. Phone: 636-933-0007.
   4. E-mail: Info@BCD-LLC.com.

B. The Mechanical/Electrical Engineer, a sub-consultant of the Architect, is: Dynamic Engineered Systems, Inc.
   1. 797 West Terra Lane
   2. O'Fallon, MO 63366
   3. Phone: 636-385-6800
   4. www.DynamicEngineeredSystems.com

C. The Structural and Civil Engineer, a sub-consultant of the Architect, is: Vonarx Engineering, Inc.
   1. 10785 Business Route 21; Suite A
   2. Hillsboro, MO 63050
   3. (636) 797-8425
   4. e-mail: Office@VonarxEngineering.com

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 00 0102

SECTION 00 4336

PROPOSED SUBCONTRACTORS FORM

PARTICULARS

1.01 HEREWITH IS THE LIST OF SUBCONTRACTORS REFERENCED IN THE BID SUBMITTED BY:

1.02 (BIDDER) _____

1.03 TO (OWNER): COUNTY OF JEFFERSON; COUNTY SERVICES & CODE ENFORCEMENT DEPT

1.04 DATED _____ AND WHICH IS AN INTEGRAL PART OF THE BID FORM.

1.05 THE FOLLOWING WORK WILL BE PERFORMED (OR PROVIDED) BY SUBCONTRACTORS AND COORDINATED BY US:

LIST OF SUBCONTRACTORS

2.01 WORK SUBJECT.....SUBCONTRACTOR NAME

A. Selective Demolition..... _____
B. Excavating..... _____
C. Aggregate Base Course. . . _____
D. Concrete Supplier..... _____
E. Concrete Finisher..... _____
F. Concrete Reinforcing... _____
G. Masonry..... _____
H. Steel Stair Supplier..... _____
I. Handrails & Guards..... _____
J. Decorative Metals/Railings..... _____
K. Rough/Finish Carpentry..... _____
L. Mf'd Wood Roof Trusses..... _____
M. Roof Shingles..... _____
N. Structural Metal Roofing, Pre-finished: _____
O. Wall/Roof Insulation ..... _____
P. Flashing, Gutters, Downspouts ..... _____
Q. Windows ..... _____
R. Doors & Frames ..... _____
S. Door Hardware..... _____
T. Interior Framing & Drywall ..... _____
U. Drywall Finishing ..... _____
V. Painting ..... _____
W. FRP Wallcovering. . . _____
X. Flooring ..... _____
Y. Fluid Applied Floor Coatings..... _____
Z. Cabinets/Casework..... _____
AA. Interior Signage..... _____
AB. Solid Surface Countertops..... _____
AC. HVAC ..... _____
AD. Plumbing ..... _____
AE. Electrical ..... _____

END OF SECTION 00 4336

SECTION 00 5000

CONTRACTING FORMS AND SUPPLEMENTS

PART 1 GENERAL

1.01 AGREEMENT AND CONDITIONS OF THE CONTRACT

A. The Agreement form is AIA A101.

B. The General Conditions form is AIA A201.

1.02 FORMS

A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in Contract Documents.

B. Bond Forms:
   1. Bid Bond Form: AIA A310.
   2. Performance and Payment Bond Form: AIA A312.

C. Post-Award Certificates and Other Forms:
   1. Schedule of Values Form: AIA G703.
   2. Application for Payment Forms: AIA G702 with AIA G703 (for Contractors).

D. Clarification and Modification Forms:
   1. Change Order Form: AIA G701.

E. Closeout Forms:
   1. Certificate of Substantial Completion Form: AIA G704.
   2. Consent of Surety to Final Payment Form: AIA G707.
   3. Affidavit of Compliance with Prevailing Wage Law (MO Dept of Labor).

1.03 REFERENCE STANDARDS

A. AIA A101 - Standard Form of Agreement Between Owner and Contractor where the basis of Payment is a Stipulated Sum; 2017.

B. AIA A201 - General Conditions of the Contract for Construction; 2017.

C. AIA A310 - Bid Bond; 2010.

D. AIA A312 - Performance Bond and Payment Bond; 2010.

E. AIA G701 - Change Order; 2017.

F. AIA G702 - Application and Certificate for Payment; 1992.

G. AIA G703 - Continuation Sheet; 1992.

H. AIA G704 - Certificate of Substantial Completion; 2017.

I. AIA G707 - Consent of Surety to Final Payment; 1994.

END OF SECTION 00 5000

SECTION 00 7300

SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.01 SUMMARY

A. These Supplementary Conditions amend and supplement the General Conditions defined in Document 00 7200 - General Conditions and other provisions of Contract Documents as indicated below. Provisions that are not so amended or supplemented remain in full force and effect.

B. The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

1.02 RELATED SECTIONS

A. Section 00 5000 - Contracting Forms and Supplements.

B. Section 01 4216 - Definitions.

1.03 MODIFICATIONS TO GENERAL CONDITIONS

A. MODIFICATIONS TO AIA A201

1. ARTICLE 7 - CHANGES IN THE WORK
    a. To Article 7.2 'Change Orders' is added: "Should concealed conditions encountered in the performance of the work below the surface of the ground be at variance with the conditions indicated by the Contract Documents or should unknown physical conditions below the surface of the ground be of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this contract, or other conditions not anticipated be encountered, the contract Sum shall be equitably adjusted by Change Order upon claim by either party made within fifteen days after the first observance of the condition."
2. ARTICLE 7.3 - CONSTRUCTION CHANGE DIRECTIVES
    a. Add the following subparagraph:
        1) 7.3.11: The Agreement identifies the overhead and profit fees applicable for Changes in the Work, whether additions to or deductions from the Work on which the Contract Sum is based and identifies the fees for subcontract work for changes (both additions and deductions) in the Work. The Contractor shall apply fees as noted, to the Subcontractor's gross (net plus fee) costs.
3. ARTICLE 8 - TIME
    a. Add the following subparagraph:
        1) 8.1.5: Contract Time commences at the time of Contract award and continues as stated in bidder's proposal.
4. ARTICLE 11 - INSURANCE
    a. Amend Article 11 to read:
    b. The contractor and Subcontractors, at their own expense, shall purchase and maintain in a company or companies acceptable to the Owner, insurance that will protect them from claims set forth below which may arise out of or result from the Contractors operations under the contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by them, or by anyone for those acts they may be liable:
        1) Claims under Workmen's Compensation Acts including Federal, State, Maritime or other laws; Employer's liability $1,000,000.
        2) Claims for damages by his employees because of bodily injury, occupational sickness or disease, or death, for claims under Comprehensive General Liability including Contractor's Liability; Completed Operations Independent Contractor's Liability; Contractual Liability and Products Liability, all on the occurrence basis with Bodily Injury Coverage and Broad Form Property Damage. Remove the XCU exclusion relating to explosion, collapse and underground property damages.
            (a) $1,000,000 Each Occurrence
            (b) $2,000,000 Aggregate
        3) Property Damage:
            (a) Each Occurrence: $500,000.
            (b) Aggregate: $1,000,000.

4) Completed Operations Liability to be kept in force for at least two years from date of final completion.
5) Claims for damages of persons other than his employees because of bodily injury, sickness or disease, or death and claims insured by usual Liability Coverage; and
6) Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom.
   (a) Bodily Injury (Including Personal Injury):
      (1) Each Person: $500,000.
      (2) Each Occurrence: $500,000
   (b) Property Damage:
      (1) Each Occurrence: $500,000.
      (2) Aggregate: $1,000,000.
7) Comprehensive Automobile Liability including Non-Ownership and Hired Car Coverage as well as Owned Vehicles:
   (a) $1,000,000 Combined single limit
8) Commercial General Liability Coverage: $1,000,000 Limit

c. To Article 11 add the following: "Certificates called for shall be furnished in duplicate, and specifically set forth evidence of required coverages and the Contractor shall furnish to the Architect copies of any endorsements that are subsequently issued amending coverage or limits."
d. Amend Article 11 "Owner's Liability Insurance" to read: "The Owner, at his expense, shall purchase and maintain Owner's Contingent Liability Insurance which will protect him from claims or damages because of bodily injury, including death and property damage which may arise from operations under the contract, as follows:
   1) $1,000,000 Each Occurrence
   2) $2,000,000 Aggregate
e. Article 11 "Property Insurance" is amended to read: "The Owner, at his expense, shall purchase and maintain Builder's Risk, Fire, Extended Coverage, Vandalism, and Malicious Mischief Insurance upon the entire work at the site to the full insurable value thereof. This insurance shall include the interests of the Owner, Contractor, Subcontractor, and Sub-subcontractor, and the work."
f. Add the following to Article 11: "In waiving rights of recovery under terms of this paragraph, the term 'Owner' shall be deemed to include his employees and the Architect and his employees as the Owner's representative as provided for in the Contract Documents."

5. All required coverages shall identify the Project Owner(s) as additional insured(s).
6. ARTICLE 11.5 - PERFORMANCE BOND AND PAYMENT BOND
   a. Add the following subparagraph:
      1) 11.5.3: The bond value requirements are as follows:
         (a) Provide bonds on AIA A312.
         (b) Provide a 100 percent Performance Bond.
         (c) Provide a 100 percent Payment Bond.
7. PERMITS AND NOTICES:
   a. Owner shall bear the costs of any permits required by local authority having jurisdiction, local fire department or health department.

END OF SECTION 00 7300

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.

B. References and standards.

C. Inspection agencies and services.

D. General Contractor's design-related professional design services.

E. Control of installation.

F. Defect Assessment.

1.02 REFERENCE STANDARDS

1.03 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES

A. Coordination: General Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.

B. Base design on performance and/or design criteria indicated in individual specification sections.

C. Scope of General Contractor's Professional Design Services: Provide for the following items of work:
   1. Structural Design of Wood Trusses: As described in Section 06 1753 - Shop-Fabricated Wood Trusses
   2. Structural Design of Canopy: As described in Section 10 7316.13 - Metal Canopies.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.05 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.06 TESTING AND INSPECTION AGENCIES AND SERVICES

A. Owner will employ and pay for services of an independent testing agency to perform other specified testing.

B. Employment of agency in no way relieves General Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 3 EXECUTION

2.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

2.02 TESTING AND INSPECTION

A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and General Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and General Contractor of observed irregularities or non-compliance of Work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests/inspections specified.

B. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of General Contractor.
   4. Agency has no authority to stop the Work.

C. General Contractor Responsibilities:
   1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
   5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by General Contractor beyond specified requirements.
   6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by General Contractor beyond specified requirements.

D. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.

E. Re-testing required because of non-compliance with specified requirements shall be paid for by General Contractor.

2.03 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

B. If, in the opinion of Owner, it is not practical to remove and replace the work, Owner will direct an appropriate remedy or adjust payment.

END OF SECTION 01 4000

SECTION 01 4100

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY OF REFERENCE STANDARDS

A. Regulatory requirements applicable to this project are the following:

B. 28 CFR 35 - Nondiscrimination on the Basis of Disability in State and Local Government Services; Final Rule; Department of Justice; current edition.

C. 28 CFR 36 - Nondiscrimination by Public Accommodations and in Commercial Facilities; Final Rule; Department of Justice; current edition.

D. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

E. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

F. 29 CFR 1910 - Occupational Safety and Health Standards; current edition.

G. County of Jefferson amendments to some or all of the following.
   1. International Building Code 2015
   2. International Fuel Gas Code 2015
   3. International Fire Code 2015
   4. International Mechanical Code 2009
   5. International Energy Code 2015
   6. International Plumbing Code 2015
   7. National Electric Code 2008

H. NFPA 101 - Life Safety Code; 2015.

I. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

J. Jefferson County Electrical Code 2017.

END OF SECTION 01 4100

SECTION 01 4216
DEFINITIONS

PART 1 GENERAL

1.01 SUMMARY

A. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

A. Furnish: To supply, deliver, unload, and inspect for damage.

B. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.

C. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.

D. Project Manual: The book-sized volume that includes the procurement requirements (if any), the contracting requirements, and the specifications.

E. Provide: To furnish and install.

F. Supply: Same as Furnish.

END OF SECTION 01 4216

SECTION 01 4533

CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Code-required special inspections.

B. Testing services incidental to special inspections.

C. Submittals.

1.02 DEFINITIONS

A. Code or Building Code: 2009 Edition of the International Building Code and, more specifically, Chapter 17 - Structural Tests and Inspections, of same.

B. Authority Having Jurisdiction (AHJ): Agency or individual officially empowered to enforce the building, fire and life safety code requirements of the permitting jurisdiction in which the Project is located.

C. Special Inspection:
   1. Special inspections are inspections and testing of materials, installation, fabrication, erection or placement of components and connections mandated by the AHJ that also require special expertise to ensure compliance with the approved Contract Documents and the referenced standards.
   2. Special inspections are separate from and independent of tests and inspections conducted by Owner or General Contractor for the purposes of quality assurance and contract administration.

1.03 REFERENCE STANDARDS

A. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2016).

B. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2015ae1.

C. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete; 2014a.

D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.

E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2014a.

F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2015.

G. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; 2011.

1.04 SUBMITTALS

A. Special Inspection Reports: After each special inspection, Special Inspector is required to promptly submit at least two copies of report; one to Architect and one to the AHJ.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of Special Inspector.
      d. Date and time of special inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of special inspection.
      h. Date of special inspection.
      i. Results of special inspection.
      j. Compliance with Contract Documents.

B. Test Reports: After each test or inspection, promptly submit at least two copies of report; one to Architect and one to AHJ.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.

f. Location in the Project.
g. Type of test or inspection.
h. Date of test or inspection.
i. Results of test or inspection.
j. Compliance with Contract Documents.

1.05 SPECIAL INSPECTION AGENCY

A. Owner or Architect will employ services of a Special Inspection Agency to perform inspections and associated testing and sampling in accordance with ASTM E329 and required by the building code.

B. The Special Inspection Agency may employ and pay for services of an independent testing agency to perform testing and sampling associated with special inspections and required by the building code.

C. Employment of agency in no way relieves General Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.06 TESTING AND INSPECTION AGENCIES

A. Owner or Architect may employ services of an independent testing agency to perform additional testing and sampling associated with special inspections but not required by the building code.

B. Employment of agency in no way relieves General Contractor of obligation to perform work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 SCHEDULE OF SPECIAL INSPECTIONS, GENERAL

A. Frequency of Special Inspections: Special Inspections are indicated as continuous or periodic.
1. Continuous Special Inspection: Special Inspection Agency is required to be present in the area where the work is being performed and observe the work at all times the work is in progress.
2. Periodic Special Inspection: Special Inspection Agency is required to be present in the area where work is being performed and observe the work part-time or intermittently and at the completion of the work.

3.02 SPECIAL INSPECTIONS FOR CONCRETE CONSTRUCTION

A. Reinforcing Steel, Including Prestressing of Tendons and Placement: Verify compliance with approved Contract Documents and ACI 318, Sections 3.5 and 7.1 through 7.7; periodic.

B. Reinforcing Steel Welding: Verify compliance with AWS D1.4/D1.4M and ACI 318, Section 3.5.2; periodic.

C. Design Mix: Verify plastic concrete complies with the design mix in approved Contract Documents and with ACI 318, Chapter 4 and 5.2; periodic.

D. Concrete Sampling Concurrent with Strength Test Sampling: Each time fresh concrete is sampled for strength tests, verify compliance with ASTM C172/C172M, ASTM C31/C31M and ACI 318, Sections 5.6 and 5.8 and record the following, continuous:
1. Slump.
2. Air content.
3. Temperature of concrete.

E. Specified Curing Temperature and Techniques: Verify compliance with approved Contract Documents and ACI 318, Sections 5.11 through 5.13; periodic.

F. Formwork Shape, Location and Dimensions: Verify compliance with approved Contract Documents and ACI 318, Section 6.1.1; periodic.

3.03 SPECIAL INSPECTIONS FOR SOILS

A. Materials and Placement: Verify each item below complies with approved construction documents and approved geotechnical report.
1. Design bearing capacity of material below shallow foundations; periodic.
2. Design depth of excavations and suitability of material at bottom of excavations; periodic.
3. Materials, densities, lift thicknesses; placement and compaction of backfill: continuous.
4. Subgrade, prior to placement of compacted fill verify proper preparation; periodic.

B. Testing: Classify and test excavated material; periodic.

3.04 SPECIAL INSPECTIONS FOR CAST-IN-PLACE DEEP FOUNDATIONS

A. Materials, Equipment and Final Placement: Verify each item below complies with approved construction documents and approved geotechnical report.
   1. Element length; continuous.
   2. Element diameters and bell diameters; continuous.
   3. Placement locations and plumbness; continuous.

B. Material Volume: Record concrete and grout volumes.

C. Concrete Elements Associated with Cast-in-Place Deep Foundations: Perform additional inspections as required by the Special Inspections for Concrete Construction article of this section.

3.05 SPECIAL INSPECTION AGENCY DUTIES AND RESPONSIBILITIES

A. Special Inspection Agency shall:
   1. Provide qualified personnel at site. Cooperate with Architect and General Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified reference standards.
   3. Ascertain compliance of materials and products with requirements of Contract Documents.
   4. Promptly notify Architect and General Contractor of observed irregularities or non-compliance of work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests or inspections specified.

B. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.

C. Re-testing required because of non-compliance with specified requirements shall be paid for by General Contractor.

3.06 TESTING AGENCY DUTIES AND RESPONSIBILITIES

A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and General Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and General Contractor of observed irregularities or non-compliance of work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests or inspections specified.

B. Limits on Testing or Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the work.
   3. Agency may not assume any duties of General Contractor.
   4. Agency has no authority to stop the work.

C. On instructions by Architect, perform re-testing required because of non-compliance with specified requirements, using the same agency.

D. General Contractor will pay for re-testing required because of non-compliance with specified requirements.

3.07 CONTRACTOR DUTIES AND RESPONSIBILITIES

A. General Contractor Responsibilities, General:
   1. Deliver to agency at designated location, adequate samples of materials for special inspections that require material verification.
   2. Cooperate with agency and laboratory personnel; provide access to approved documents at project site, to the work, to manufacturers' facilities, and to fabricators' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to work to be tested or inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested or inspected.
      c. To facilitate tests or inspections.

d. To provide storage and curing of test samples.

4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing or inspection services.
5. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by General Contractor beyond specified requirements.

END OF SECTION 01 4533

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Dewatering

B. Temporary utilities.

C. Temporary sanitary facilities.

D. Vehicular access and parking.

E. Waste removal facilities and services.

F. Project identification sign.

G. Project informational signs/postings.

1.02 DEWATERING

A. Provide temporary means and methods for dewatering all temporary facilities and controls.

1.03 TEMPORARY UTILITIES

A. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.

B. New permanent facilities may not be used.

C. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.04 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

1.05 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way.

C. Provide protection for plants designated to remain. Replace damaged plants.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 EXTERIOR ENCLOSURES

A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.07 VEHICULAR ACCESS AND PARKING

A. Coordinate access and haul routes with governing authorities and Owner.

B. Provide and maintain access to fire hydrants, free of obstructions.

C. Provide means of removing mud from vehicle wheels before entering streets.

D. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

E. Existing parking areas may be used for construction parking.

1.08 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Remove trash from site periodically.

C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.09 PROJECT IDENTIFICATION

A. Provide project identification sign of design and construction indicated on drawings.

B. Erect on site at location established by Architect.

C. No other signs are allowed without Owner permission except those required by law.

1.10 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.

B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original condition.

E. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 5000

SECTION 01 5713

TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prevention of erosion due to construction activities.

B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.

C. Restoration of areas eroded due to insufficient preventive measures.

D. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by General Contractor.

1.02 REFERENCE STANDARDS

A. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2017.

1.03 PERFORMANCE REQUIREMENTS

A. Comply with requirements of State of Missouri Dept of Natural Resources.

B. Comply with requirements of Civil/Site Engineer's Stormwater Management Plan.

C. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
   1. Owner will obtain permits and pay for securities required by authority having jurisdiction.
   2. Owner will withhold payment to General Contractor equivalent to all fines resulting from non-compliance with applicable regulations.

D. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

E. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
   1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
   2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.

F. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
   1. Control movement of sediment and soil from temporary stockpiles of soil.
   2. Prevent development of ruts due to equipment and vehicular traffic.
   3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

G. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
   1. Prevent windblown soil from leaving the project site.
   2. Prevent tracking of mud onto public roads outside site.
   3. Prevent mud and sediment from flowing onto sidewalks and pavements.
   4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

H. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

I. Open Water: Prevent standing water that could become stagnant.

J. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

PART 3 EXECUTION

2.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

2.02 PREPARATION

A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

2.03 SCOPE OF PREVENTIVE MEASURES

A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.

B. Construction Entrances: Traffic-bearing aggregate surface.
   1. Width: As required; 20 feet, minimum.
   2. Length: 50 feet, minimum.
   3. Provide at each construction entrance from public right-of-way.
   4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

C. Linear Sediment Barriers: Made of silt fences.
   1. Provide linear sediment barriers:
      a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
      b. Along the toe of cut slopes and fill slopes.
      c. Across the entrances to culverts that receive runoff from disturbed areas.
   2. Space sediment barriers with the following maximum slope length upslope from barrier:
      a. Slope of Less Than 2 Percent: 100 feet..
      b. Slope Between 2 and 5 Percent: 75 feet.
      c. Slope Between 5 and 10 Percent: 50 feet.
      d. Slope Between 10 and 20 Percent: 25 feet.
      e. Slope Over 20 Percent: 15 feet.

D. Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:
   1. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
   2. Straw bale row blocking entire inlet face area; anchor into pavement.

E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.

F. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.

G. Soil Stockpiles: Protect using one of the following measures:
   1. Cover with polyethylene film, secured by placing soil on outer edges.
   2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw or hay.

H. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.

I. Temporary Seeding: Use where temporary vegetated cover is required.

2.04 INSTALLATION

A. Traffic-Bearing Aggregate Surface:
   1. Excavate minimum of 6 inches.
   2. Place and compact at least 6 inches of 1 1/2 to 3 1/2 inch diameter stone.

B. Silt Fences:
   1. Store and handle fabric in accordance with ASTM D4873/D4873M.
   2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch high barriers with minimum 36 inch long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.
   3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch high barriers, minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.

4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet, use nominal 32 inch high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.
5. Install with top of fabric at nominal height and embedment as specified.
6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
7. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.

C. Straw Bale Rows:
1. Install bales in continuous rows with ends butting tightly, with one bale at each end of row turned uphill.
2. Install bales so that bindings are not in contact with the ground.
3. Embed bales at least 4 inches in the ground.
4. Anchor bales with at least two stakes per bale, driven at least 18 inches into the ground; drive first stake in each bale toward the previously placed bale to force bales together.
5. Fill gaps between ends of bales with loose straw wedged tightly.
6. Place soil excavated for trench against bales on the upslope side of the row, compacted.

D. Mulching Over Small and Medium Areas:
1. Dry Straw and Hay: Apply 4 to 6 inches depth.

E. Temporary Seeding:
1. When hydraulic seeder is used, seedbed preparation is not required.
2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
5. Incorporate fertilizer into soil before seeding.
6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
8. Repeat irrigation as required until grass is established.

2.05 MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.

B. Repair deficiencies immediately.

C. Silt Fences:
1. Promptly replace fabric that deteriorates unless need for fence has passed.
2. Remove silt deposits that exceed one-third of the height of the fence.
3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D. Straw Bale Rows:
1. Promptly replace bales that fall apart or otherwise deteriorate unless need has passed.
2. Remove silt deposits that exceed one-half of the height of the bales.
3. Repair bale rows that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

E. Place sediment in appropriate locations on site; do not remove from site.

2.06 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.

B. Clean out temporary sediment control structures that are to remain as permanent measures.

C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION 01 5713

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Re-use of existing products.

B. Transportation, handling, storage and protection.

C. Product option requirements.

D. Substitution limitations.

E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.

B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the General Contractor; remove from site.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by Contract Documents.

B. Use of products having any of the following characteristics is not permitted:

1. Made using or containing CFC's or HCFC's.
2. Made of wood from newly cut old growth timber.

C. Where other criteria are met, General Contractor shall give preference to products that:

1. If used on interior, have lower emissions, as defined in Section 01 6116.
2. If wet-applied, have lower VOC content, as defined in Section 01 6116.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.04 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. See Section 01 2500 - Substitution Procedures.

3.02 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Provide protection of stored materials and products against theft, casualty, or deterioration.

B. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 7419.

1. Structural Loading Limitations: Handle and store products and materials so as not to exceed static and dynamic load-bearing capacities of project floor and roof areas.

C. Store and protect products in accordance with manufacturers' instructions.

D. Store with seals and labels intact and legible.

E. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

F. For exterior storage of fabricated products, place on sloped supports above ground.

G. Provide off-site storage and protection when site does not permit on-site storage or protection.

1. Demonstrate insurance coverage for the materials stored off-site.

H. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

I. Comply with manufacturer's warranty conditions, if any.

J. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

K. Prevent contact with material that may cause corrosion, discoloration, or staining.

L. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

M. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION 01 6000

SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Requirements for alterations work, including selective demolition, _____.

C. Pre-installation meetings.

D. Cutting and patching.

E. Surveying for laying out the work.

F. Cleaning and protection.

G. Starting of systems and equipment.

H. Demonstration and instruction of Owner personnel.

I. Closeout procedures, including General Contractor's Correction Punch List, except payment procedures.

J. General requirements for maintenance service.

1.02 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences. Include design drawings and calculations for bracing and shoring.
   2. Identify demolition firm and submit qualifications.
   3. Include a summary of safety procedures.

C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate Contractor.

D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 QUALIFICATIONS

A. For demolition work, employ a firm specializing in the type of work required.

B. For surveying work, employ a land surveyor registered in Missouri and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

C. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in Missouri. Employ only individual(s) trained and experienced in establishing and maintaining horizontal and vertical control points necessary for laying out construction work on project of similar size, scope and/or complexity.

D. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in Missouri.

E. For design of automatic fire suppression system (wet sprinklers), employ a Professional Engineer experienced in design of this type of work and licensed in Missouri.

1.05 PROJECT CONDITIONS

A. Use of explosives is not permitted.

B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

D. Perform dewatering activities, as required, for the duration of the project.

E. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

F. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
   1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.

G. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
   1. Minimize amount of bare soil exposed at one time.
   2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
   3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
   4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
   5. Comply with any Storm Water Management Plans filed by the Owner or his consultants relative to this project site.

H. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
   1. At All Times: Excessively noisy tools and operations will not be tolerated on site anywhere at any time of day; excessively noisy includes jackhammers.
   2. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.

I. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

J. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

K. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.06 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Notify affected utility companies and comply with their requirements.

C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

F. Coordinate completion and clean-up of work of separate sections.

G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Architect two days in advance of meeting date.

D. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants, with digital copies to Architect, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Architect of any discrepancies discovered.

C. General Contractor shall locate and protect survey control and reference points.

D. Control datum for survey is that indicated on drawings.

E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

F. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.

H. Utilize recognized engineering survey practices.

I. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations.

J. Periodically verify layouts by same means.

K. Maintain a complete and accurate log of control and survey work as it progresses.

L. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

3.05 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Verify locations of existing items to remain in place. Confirm proposed new construction is compatible with existing conditions to remain.
   3. Report discrepancies to Architect before disturbing existing installation.
   4. Beginning of alterations work constitutes acceptance of existing conditions.

B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
   1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
   2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.

C. Remove existing work as indicated and as required to accomplish new work.
   1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
   2. Remove items indicated on drawings.
   3. Relocate items indicated on drawings.
   4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
   5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

D. Services (Including but not limited to HVAC, Plumbing, and Electrical): Remove, relocate, and extend existing systems to accommodate new construction.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
   2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
   3. Verify that abandoned services serve only abandoned facilities.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

E. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.

F. Adapt existing work to fit new work: Make as neat and smooth transition as possible.

1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.

G. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.

H. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.

I. Clean existing systems and equipment.

J. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

K. Do not begin new construction in alterations areas before demolition is complete.

L. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. See Alterations article above for additional requirements.

C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-complying work.

D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing.

E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

G. Restore work with new products in accordance with requirements of Contract Documents.

H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.

J. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
2. Match color, texture, and appearance.
3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.08 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.09 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.

G. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

H. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.10 SYSTEM STARTUP

A. Coordinate schedule for start-up of various equipment and systems.

B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

D. Verify that wiring and support components for equipment are complete and tested.

E. Execute start-up under supervision of applicable General Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

F. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.11 DEMONSTRATION AND INSTRUCTION

A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.

D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.12 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.13 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

B. Use cleaning materials that are nonhazardous.

C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces,

D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

F. Clean filters of operating equipment.

G. Clean debris from roofs, gutters, downspouts, overflow drains, area drains, and drainage systems.

H. Clean site; sweep paved areas, rake clean landscaped surfaces.

I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.14 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.

B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the General Contractor's Correction Punch List for General Contractor's Notice of Substantial Completion.

C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

D. Submit written certification containing General Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.

E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and General Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.

H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.15 MAINTENANCE

A. Provide service and maintenance of components indicated in specification sections.

B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than 12 months from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.

C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION 01 7000

SECTION 01 7800
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

1.02 SUBMITTALS

A. Project Record Documents: Submit documents to Architect prior to approval of final application for payment..

B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   4. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish first floor datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
   1. Include HVAC outdoor and exhaust air damper calibration strategy.
      a. Include provisions which ensure that full closure of dampers can be achieved.

F. Provide servicing and lubrication schedule, and list of lubricants required.

G. Include manufacturer's printed operation and maintenance instructions.

H. Include sequence of operation by controls manufacturer.

I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

J. Provide control diagrams by controls manufacturer as installed.

K. Include test and balancing reports.

L. Additional Requirements: As specified in individual product specification sections.

3.04 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, General Contractor and subcontractors, with names of responsible parties.

F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

H. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.

I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

3.05 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION 01 7800

SECTION 02 4100
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.
   1. Existing Stage at west of Room 116, including all partial height walls, raised floors, accessories, fixtures, devices, wiring, piping. Remove all existing construction down to existing floor level 100'-0", and to walls/partitions defining this room.
   2. Raised floor and cabinets counters in Room 118; cabinets and counters to be re-installed at existing floor level 100'-0".
   3. Kitchen Equipment and fixtures indicated in plans at Room 122
   4. Folding partitions (3) at south of Room 116 and in Room 117.

B. Remove Existing Dumpster enclosure and bollards.

C. Relocate existing Storage Shed at West of existing building to new location, further west, beyond existing chain link fence.

D. Various openings in existing walls for new doors, windows and borrow lites.

E. Other items denoted in Demolition plans (Sheet A-1.0).

F. Other items not denoted in Plans but which must be removed to accommodate proposed new construction or alterations.

1.02 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Site Plan: Showing:
   1. Areas for temporary construction and field offices.
   2. Areas for temporary and permanent placement of removed materials.

C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
   2. Identify demolition firm and submit qualifications.

D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SCOPE

A. As indicated in Architect, MEP Engineer, Structural Engineer and Civil/Site Engineer draiwings and specifications..

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   2. Provide, erect, and maintain temporary barriers and security devices.
   3. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   4. Do not close or obstruct roadways or sidewalks without permit.
   5. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   6. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

D. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

E. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

E. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

C. Remove existing work as indicated and as required to accomplish new work.

D. Services (Including but not limited to HVAC, Plumbing, and Electrical): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Verify that abandoned services serve only abandoned facilities before removal.
   3. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

E. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 02 4100

SECTION 03 3000

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 REFER ALSO TO STRUCTURAL ENGINEER'S PLANS AND NOTES.

1.02 SECTION INCLUDES

A. Concrete formwork.

B. Floors and slabs on grade.

C. Concrete reinforcement.

D. Joint devices associated with concrete work.

E. Concrete curing.

1.03 RELATED REQUIREMENTS

A. Structural Engineers notes, specifications and drawings.

B. Section 07 9200 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

1.04 REFERENCE STANDARDS

A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).

B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).

C. ACI 301 - Specifications for Structural Concrete; 2016.

D. ACI 302.1R - Guide to Concrete Floor and Slab Construction; 2015.

E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

F. ACI 305R - Guide to Hot Weather Concreting; 2010.

G. ACI 306R - Guide to Cold Weather Concreting; 2016.

H. ACI 308R - Guide to External Curing of Concrete; 2016.

I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2016).

J. ACI 347R - Guide to Formwork for Concrete; 2014.

K. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.

L. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2018.

M. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.

N. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016, with Editorial Revision (2016).

O. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.

P. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2017a.

Q. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2015a.

R. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.

S. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2016.

T. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2016.

U. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2011.

V. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.

W. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2014.

X. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2015.

Y. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.

Z. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2015.

AA. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete; 2011.

AB. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2018.

AC. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011 (Reapproved 2017).

AD. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017.

AE. COE CRD-C 513 - COE Specifications for Rubber Waterstops; 1974.

AF. NSF 61 - Drinking Water System Components - Health Effects; 2017.

AG. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
   1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.

C. Mix Design: Submit proposed concrete mix design.
   1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
   2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.

D. Samples: Submit samples of underslab vapor retarder to be used.

E. Test Reports: Submit report for each test or series of tests specified.

1.06 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.
   1. Maintain one copy of each document on site.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.

B. Form Materials: General Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
   1. Form Facing for Exposed Finish Concrete: Steel.
   2. Earth Cuts: Do not use earth cuts as forms for vertical surfaces. Natural rock formations that maintain a stable vertical edge may be used as side forms.
   3. Chamfer outside corners of beams, joists, columns and walls.
   4. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
   5. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT MATERIALS

A. Refer also to Structural Engineeer's plans, details and specifications.

B. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
   1. Type: Deformed billet-steel bars.
   2. Finish: Unfinished.

C. Steel Welded Wire Reinforcement (WWR): Deformed type, ASTM A1064/A1064M.
   1. Form: Flat Sheets.
   2. WWR Style: 4 x 8-W6 x W10.

D. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
   3. Provide galvanized components for placement within 1-1/2 inches of weathering surfaces.

2.03 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
   1. Acquire cement for entire project from same source.

B. Fine and Coarse Aggregates: ASTM C33/C33M.
   1. Acquire aggregates for entire project from same source.

C. Fly Ash: ASTM C618, Class C or F.

D. Calcined Pozzolan: ASTM C618, Class N.

E. Silica Fume: ASTM C1240, proportioned in accordance with ACI 211.1.

F. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.04 ACCESSORY MATERIALS

A. Underslab Vapor Retarder: Sheet material complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited.
   1. Installation: Comply with ASTM E1643.
   2. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.

2.05 BONDING AND JOINTING PRODUCTS

A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.

B. Epoxy Bonding System:
   1. Complying with ASTM C881/C881M and of Type required for specific application.

C. Waterstops: Rubber, complying with COE CRD-C 513.

D. Waterstops: Bentonite and butyl rubber, complying with NSF 61 and NSF 372.

E. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
   1. Material: ASTM D1751, cellulose fiber.
   2. Manufacturers:
      a. W. R. Meadows, Inc; Fiber Expansion Joint Filler with Snap-Cap: www.wrmeadows.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

F. Slab Contraction Joint Device: Preformed linear strip intended for pressing into wet concrete to provide straight route for shrinkage cracking.

G. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches on center; ribbed steel stakes for setting.

2.06 CURING MATERIALS

A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.

B. Curing and Sealing Compound, Moisture Emission-Reducing, Penetrating: Liquid for application to newly-placed concrete; capable of providing adequate bond for flooring adhesives, initially and over the

long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission, moisture vapor emission, and alkalinity.
1. Use this product to cure and seal all slabs to receive adhesively applied flooring or roofing.
2. Compressive Strength of Treated Concrete: Equal to or greater than strength after 28-day water cure when tested according to ASTM C39/C39M.
3. Comply with ASTM C309 and ASTM C1315 Type I Class A.

C. Moisture-Retaining Sheet: ASTM C171.
1. Polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch.
2. White-burlap-polyethylene sheet, weighing not less than 3.8 ounces per square yard.

D. Water: Potable, not detrimental to concrete.

2.07 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of trial mixtures, as specified in ACI 301.
1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.

C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.

D. Normal Weight Concrete:
1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on drawings.
2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
3. Calcined Pozzolan Content: Maximum 10 percent of cementitious materials by weight.
4. Silica Fume Content: Maximum 5 percent of cementitious materials by weight.
5. Water-Cement Ratio: Maximum 45 percent by weight.
6. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
7. Maximum Slump: 4 inches.
8. Maximum Aggregate Size: 5/8 inch.

2.08 MIXING

A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.

B. Transit Mixers: Comply with ASTM C94/C94M.

C. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

B. Verify that forms are clean and free of rust before applying release agent.

C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
2. Use latex bonding agent only for non-load-bearing applications.

E. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

F. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
   1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as indicated on drawings. Do not use sand.

G. Exterior Slabs on Grade for walks: Install vapor retarder under slabs. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
   1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as indicated on the drawings. Do not use sand.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Notify Architect not less than 24 hours prior to commencement of placement operations.

D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

E. Ensure reinforcement will not be disturbed during concrete placement.

F. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

G. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

H. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.05 SLAB JOINTING

A. Locate joints as indicated on drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
   1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.

D. Contraction Joint Devices: Use preformed joint device, with top set flush with top of slab.

E. Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant.

3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. An independent testing agency, as specified in Section 01 4000, will inspect finished slabs for compliance with specified tolerances.

B. Maximum Variation of Surface Flatness:
   1. Exposed Concrete Floors: 1/4 inch in 10 feet.
   2. Under Seamless Resilient Flooring: 1/4 inch in 10 feet.
   3. Under Carpeting: 1/4 inch in 10 feet.

C. Correct the slab surface if tolerances are less than specified.

D. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.07 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
   1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.

D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
   1. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 302.1R; thin floor coverings include carpeting and resilient flooring.
   2. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

E. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains as indicated on drawings.

3.08 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
   1. Normal concrete: Not less than seven days.

C. Surfaces Not in Contact with Forms:
   1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by saturated burlap.
      a. Saturated Burlap: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place.
   2. Final Curing: Begin after initial curing but before surface is dry.
      a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.
      b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.09 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.

E. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 75 cubic yards or less of each class of concrete placed.

F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.10 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect and General Contractor within 24 hours of test.

B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by General Contractor when defective concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.11 PROTECTION

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION 03 3000

SECTION 04 2000
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.

B. Mortar and grout.

C. Reinforcement and anchorage.

D. Flashings.

E. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Nailing strips built into masonry.

B. Section 07 2123 - Loose-Fill Insulation: Granular insulation for masonry unit cores.

C. Section 07 9200 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.

B. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).

C. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2016.

D. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2018.

E. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016a.

F. ASTM C91/C91M - Standard Specification for Masonry Cement; 2012.

G. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2017.

H. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2017.

I. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.

J. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.

K. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.

L. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.

M. ASTM C476 - Standard Specification for Grout for Masonry; 2018.

N. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2017.

O. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.

P. BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls; 2017.

Q. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

C. Samples: Submit four samples of decorative block and facing brick units to illustrate color, texture, and extremes of color range.

1.06 QUALITY ASSURANCE

1.07 MOCK-UP

A. Construct a masonry wall as a mock-up panel sized 8 feet long by three feet high; include mortar, accessories, and flashings (with lap joint, corner, and end dam) in mock-up.

B. Mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
   1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
   2. Special Shapes: Provide non-standard blocks configured for corners and other detailed conditions.
      a. Provide bullnose units at all edges of passage openings in exterior wall.
   3. Load-Bearing Units: ASTM C90, normal weight.
      a. Hollow block.
      b. Exposed Faces: Manufacturer's standard color and texture.
   4. Non-Loadbearing Units: ASTM C129.
      a. Hollow block.
      b. Normal weight.

2.02 MORTAR AND GROUT MATERIALS

A. Masonry Cement: ASTM C91/C91M, Type N.

B. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.

C. Hydrated Lime: ASTM C207, Type S.

D. Mortar Aggregate: ASTM C144.

E. Grout Aggregate: ASTM C404.

F. Water: Clean and potable.

2.03 REINFORCEMENT AND ANCHORAGE

A. Manufacturers:
   1. Blok-Lok Limited; _____: www.blok-lok.com/#sle.
   2. Hohmann & Barnard, Inc: www.h-b.com/#sle.

B. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi), deformed billet bars; galvanized.

C. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.

D. Single Wythe Joint Reinforcement: ASTM A951/A951M.
   1. Type: Truss.
   2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3.
   3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.

2.04 FLASHINGS

A. Factory-Fabricated Flashing, Corners and End Dams: Plastic.
   1. Manufacturers:
      a. Mortar Net Solutions; Block Flash for single wythe walls: www.mortarnet.com/#sle.
         1) With integral weep vents

2.05 ACCESSORIES

A. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; in maximum lengths available.

B. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
   1. Mortar Diverter: Semi-rigid mesh designed for installation at flashing locations.
      a. Manufacturers:
         1) Mortar Net Solutions; MortarNet: www.mortarnet.com/#sle.
         2) Substitutions: See Section 01 6000 - Product Requirements.

C. Building Paper: ASTM D226/D226M, Type I ("No.15") asphalt felt.

D. Nailing Strips: Softwood lumber, preservative treated; as specified in Section 06 1000.

E. Weeps:
   1. Type: Integral with single wythe fabricated flashings.

F. Cavity Vents:
   1. Type: Molded PVC grilles, insect resistant.
   2. Manufacturers:
      a. Mortar Net Solutions; CellVent: www.mortarnet.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

G. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.06 MORTAR AND GROUT MIXING

A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
   1. Masonry below grade and in contact with earth: Type S.
   2. Exterior, loadbearing masonry: Type N.
   3. Interior, loadbearing masonry: Type N.
   4. Interior, non-loadbearing masonry: Type O.

B. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

C. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

A. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

3.04 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints: Concave.

3.05 PLACING AND BONDING

A. Lay hollow masonry units with face shell bedding on head and bed joints.

B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

C. Remove excess mortar and mortar smears as work progresses.

D. Interlock intersections and external corners.

E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

F. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

G. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

3.06 WEEPS/CAVITY VENTS

A. Install weeps in exterior walls at 8 inches on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.

B. Install cavity vents in exterior walls at 16 inches on center horizontally near top of walls.

3.07 CAVITY MORTAR CONTROL

A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.

B. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.08 REINFORCEMENT AND ANCHORAGE - GENERAL AND SINGLE WYTHE MASONRY

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

E. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches horizontally and 24 inches vertically.

3.09 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

B. Install flashing in accordance with manufacturer's instructions and BIA Technical Notes No. 7.

C. Support flexible flashings across gaps and openings.

3.10 LINTELS

A. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.
   1. Openings to 42 inches: Place two, No. 3 reinforcing bars 1 inch from bottom web.
   2. Openings over 78 inches: Reinforce openings as detailed.
   3. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
   4. Place and consolidate grout fill without displacing reinforcing.
   5. Allow masonry lintels to attain specified strength before removing temporary supports.

B. Maintain minimum 8 inch bearing on each side of opening.

3.11 GROUTED COMPONENTS

A. Reinforce bond beams with 2, No. 4 bars, 1 inch from bottom web.

B. Lap splices minimum 24 bar diameters.

C. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

D. Place and consolidate grout fill without displacing reinforcing.

E. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

3.12 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.

B. Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the block unit. Fill the resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.

C. Size control joints as indicated on drawings; if not indicated, 1/2 inch wide and deep.

3.13 BUILT-IN WORK

A. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
   1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

D. Do not build into masonry construction organic materials that are subject to deterioration.

3.14 TOLERANCES

A. Maximum Variation from Alignment of Columns: 1/4 inch.

B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.15 CUTTING AND FITTING

A. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.16 CLEANING

A. Remove excess mortar and mortar droppings.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

3.17 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION 04 2000

SECTION 05 5100

METAL STAIRS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Stairs with metal treads.

B. Structural steel stair framing and supports.

C. Handrails and guards.

1.02 REFERENCE STANDARDS

A. AISC 201 - AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures; 2006.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.

C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.

D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.

F. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.

G. ASTM A786/A786M - Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates; 2015.

H. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.

I. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.

J. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).

K. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).

L. SSPC-SP 2 - Hand Tool Cleaning; 1982, with Editorial Revision (2004).

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
   2. Include the design engineer's seal and signature on each sheet of shop drawings.

C. Design Data: As required by authorities having jurisdiction.

D. Plans and details prepared, signed and sealed by registered Missouri Professional Engineer (Structural).

1.04 QUALITY ASSURANCE

A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in Missouri, or personnel under direct supervision of such an engineer.

B. Fabricator Qualifications:
   1. A qualified steel fabricator that is certified by the American Institute for Steel Construction (AISC) under AISC 201.
   2. A company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

PART 2 PRODUCTS

2.01 METAL STAIRS - GENERAL

A. Metal Stairs: Provide stairs of the design specified, complete with landing platforms, vertical and horizontal supports, railings, and guards, fabricated accurately for anchorage to each other and to building structure.
   1. Regulatory Requirements: Provide stairs and railings complying with the most stringent requirements of local, state, and federal regulations; where requirements of Contract Documents exceed those of regulations, comply with Contract Documents.
   2. Structural Design: Provide complete stair and railing assemblies complying with the applicable local code.
   3. Dimensions: As indicated on drawings.
   4. Shop assemble components; disassemble into largest practical sections suitable for transport and access to site.
   5. No sharp or rough areas on exposed travel surfaces and surfaces accessible to touch.
   6. Separate dissimilar metals using paint or permanent tape.

B. Metal Jointing and Finish Quality Levels:
   1. Commercial: Exposed joints as inconspicuous as possible, whether welded or mechanical; underside of stair not covered by soffit IS considered exposed to view.
      a. Welded Joints: Intermittently welded on back side, filled with body putty, and sanded smooth and flush.
      b. Welds Exposed to View: Ground smooth and flush.
      c. Mechanical Joints: Butted tight, flush, and hairline.
      d. Bolts Exposed to View: Countersunk flat or oval head bolts; no exposed nuts.
      e. Exposed Edges and Corners: Eased to small uniform radius.
      f. Metal Surfaces to be Painted: Sanded or ground smooth, suitable for satin or matte finish.

C. Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.

D. Anchors and Related Components: Same material and finish as item to be anchored, except where specifically indicated otherwise; provide all anchors and fasteners required.

2.02 METAL STAIRS WITH METAL TREADS

A. Jointing and Finish Quality Level: Service, as defined above.

B. Risers: Closed.

C. Treads: Checkered steel plate.
   1. Tread Thickness: 1/4 inch, minimum.
   2. Anchorage to Stringers: Welded to carrier angles welded to stringers.

D. Risers: Steel sheet.
   1. Riser Thickness: As required by design; 14 gage, 0.075 inch minimum.
   2. Riser/Nosing Profile: Sloped riser with rounded nosing of minimum radius.

E. Stringers: Rolled steel channels.
   1. Stringer Depth: 12 inches.
   2. End Closure: Sheet steel of same thickness as risers welded across ends.

F. Landings: Same construction as treads, supported and reinforced as required to achieve design load capacity.

G. Railings: Steel pipe railings.

H. Finish: Shop- or factory-prime painted.

2.03 HANDRAILS AND GUARDS

A. Wall-Mounted and Stair-Mounted Rails: Round pipe or tube rails unless otherwise indicated.
   1. Outside Diameter: 1-1/4 inch, minimum, to 1-1/2 inches, maximum.

B. Guards:
   1. Top, Intermediate & Bottom Rails: Round pipe or tube rails unless otherwise indicated.
      a. Outside Diameter: 1-1/4 inch, minimum, to 1-1/2 inches, maximum.
   2. End and Intermediate Posts: Same material and size as top rails.

a. Horizontal Spacing: As indicated on drawings.
b. Mounting: Welded to top surface of stringer.

2.04 MATERIALS

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A500/A500M or ASTM A501/A501M structural tubing, round and shapes as indicated.

C. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

D. Checkered Plate: ASTM A786/A786M, rolled steel floor plate; manufacturer's standard pattern.

2.05 ACCESSORIES

A. Steel Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, and galvanized to ASTM A153/A153M where connecting galvanized components.

B. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

C. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.06 SHOP FINISHING

A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

B. Do not prime surfaces in direct contact with concrete or where field welding is required.

C. Prime Painting: Use specified shop- and touch-up primer.
1. Preparation of Steel: In accordance with SSPC-SP 2, Hand Tool Cleaning.
2. Number of Coats: One.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. When field welding is required, clean and strip primed steel items to bare metal.

3.03 INSTALLATION

A. Install components plumb and level, accurately fitted, free from distortion or defects.

B. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Provide welded field joints where specifically indicated on drawings. Perform field welding in accordance with AWS D1.1/D1.1M.

D. Other field joints may be either welded or bolted provided the result complies with the limitations specified for jointing quality levels.

E. Obtain approval prior to site cutting or creating adjustments not scheduled.

F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

G. Field Finish: Paint per 09 9123.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION 05 5100

SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preservative treated wood materials.

B. Miscellaneous framing and sheathing.

C. Communications and electrical room mounting boards.

D. Concealed wood blocking, nailers, and supports.

1.02 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2017.

C. AWPA U1 - Use Category System: User Specification for Treated Wood; 2017.

D. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers; 2016.

E. PS 1 - Structural Plywood; 2009.

F. PS 2 - Performance Standard for Wood-Based Structural-Use Panels; 2010.

G. PS 20 - American Softwood Lumber Standard; 2015.

H. SPIB (GR) - Grading Rules; 2014.

1.03 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

1.04 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Southern Pine, unless otherwise indicated.
   2. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: Kiln-dry or MC15.

D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Subflooring: Any PS 2 type, rated Sheathing.
   1. Bond Classification: Exterior.
   2. Span Rating: 24.
   3. Performance Category: 3/4 PERF CAT.

B. Underlayment: APA Underlayment; plywood, Exposure 2, 1/4 inch thick.

C. Roof Sheathing: APA PRP-108, Structural I Rated Sheathing, Exterior Exposure Class, and as follows:
   1. Span Rating: 24/0.
   2. Thickness: 1/2 inch, nominal.

D. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

E. Other Applications:
   1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
   2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
   3. Other Locations: PS 1, C-D Plugged or better.

2.04 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

B. Water-Resistive Barrier: Plastic sheet complying with ICC-ES AC38.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.

PART 3 EXECUTION

3.01 PREPARATION

A. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

F. Provide the following specific non-structural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Wall-mounted door stops.
   7. Wall Mounted Monitors.

3.04 INSTALLATION OF CONSTRUCTION PANELS

A. Subflooring: Screw to framing; staples are not permitted.

B. Underlayment: Secure to subflooring with nails and glue.

C. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.

1. At long edges use sheathing clips where joints occur between roof framing members.
2. Nail panels to framing; staples are not permitted.

D. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
1. Install adjacent boards without gaps.
2. Size: Coordinate with supplier of equipment to be mounted.

3.05 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.06 CLEANING

A. Waste Disposal: Comply with the requirements of Section 01 7419 - Construction Waste Management and Disposal.
1. Comply with applicable regulations.
2. Do not burn scrap on project site.
3. Do not burn scraps that have been pressure treated.
4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION 06 1000

SECTION 06 1753

SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated wood trusses for roof framing.

B. Bridging, bracing, and anchorage.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Installation requirements for miscellaneous framing.

1.03 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.

B. TPI 1 - National Design Standard for Metal-Plate-Connected Wood Truss Construction; 2014.

C. TPI BCSI 1 - Building Component Safety Information Booklet: The Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses; 2015.

D. TPI DSB-89 - Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses; 1989.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Show truss configurations, sizes, spacing, size and type of plate connectors, cambers, framed openings, bearing and anchor details, and bridging and bracing.
   1. Provide shop drawings stamped or sealed by design engineer.

1.05 QUALITY ASSURANCE

A. Designer Qualifications: Perform design by or under direct supervision of a Professional _____ Engineer experienced in design of this Work and licensed in Missouri.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Handle and erect trusses in accordance with TPI BCSI 1.

B. Store trusses in vertical position resting on bearing ends.

PART 2 PRODUCTS

2.01 TRUSSES

A. Wood Trusses: Designed and fabricated in accordance with TPI 1 and TPI DSB-89 to achieve structural requirements indicated.
   1. Connectors: Steel plate.
   2. Structural Design: Comply with applicable code for structural loading criteria.
   3. Roof Deflection: 1/240, maximum.

2.02 MATERIALS

A. Lumber:
   1. Moisture Content: Between 7 and 9 percent.
   2. Lumber fabricated from old growth timber is not permitted.

B. Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653/A653M ____, with G90/Z275 coating; die stamped with integral teeth; thickness as required.

C. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.03 ACCESSORIES

A. Wood Blocking, Bridging, Plates, and Miscellaneous Framing: Softwood lumber, Spruce/Pine/Fir, construction grade, 19 percent maximum and 7 percent minimum moisture content.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that supports and openings are ready to receive trusses.

3.02 ERECTION

A. Install trusses in accordance with manufacturer's instructions and TPI DSB-89 and TPI BCSI 1; maintain a copy of each TPI document on site until installation is complete.

B. Set members level and plumb, in correct position.

C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in true alignment until completion of erection and installation of permanent bracing.

D. Do not field cut or alter structural members without approval of Architect.

E. Install permanent bridging and bracing.

F. Install headers and supports to frame openings required.

G. Frame openings between trusses with lumber in accordance with Section 06 1000.

H. Coordinate placement of decking with work of this section.

3.03 TOLERANCES

A. Framing Members: 1/2 inch maximum, from true position.

END OF SECTION 06 1753

SECTION 06 2000
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

1.02 REFERENCE STANDARDS

A. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2016).

C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2016, with Errata (2017).

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with plumbing rough-in and electrical rough-in.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Interior Woodwork Items:
   1. Moldings, Bases, Casings, and Miscellaneous Trim: Red Oak; prepare for stain & varnish finish.
      a. Door casings: Cedar Creek Hardwoods (Fredericktown, MO 63645; 573.783.5786)
         1) Profile #: CCH 0203-3.25
         2) 11/16” X 3 1/4”
         3) Stain and two top coats varnish; satin gloss.
   2. Window Stools: cast plastic (cultured marble)

2.02 LUMBER MATERIALS

A. Hardwood Lumber: Red Oak species, _____ sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.

2.03 ACCESSORIES

A. Lumber for Shimming and Blocking: Softwood lumber of SYP species.

B. Safety Glass: ASTM C1048, fully tempered; clear; 1/8 inch thick, minimum.

C. Primer: Alkyd primer sealer.

D. Wood Filler: Solvent base, tinted to match surface finish color.

2.04 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.05 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

D. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:

1. Transparent:
    a. System - 5, Varnish, Conversion.
    b. Stain: As selected by Architect.
    c. Sheen: Satin.

E. Back prime woodwork items to be field finished, prior to installation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.03 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

END OF SECTION 06 2000

SECTION 06 4100
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Hardware.

1.02 RELATED REQUIREMENTS

A. Section 12 3600 - Countertops.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2016, with Errata (2017).

C. BHMA A156.9 - American National Standard for Cabinet Hardware; 2015.

D. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
   2. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

C. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet and countertop substrate and finish.

D. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.

E. Selection Samples:
   1. High Pressure Laminate
   2. Solid Surface Material for Countertops & Backsplashes.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

B. Quality Certification:
   1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   2. Provide designated labels on shop drawings as required by certification program.
   3. Provide designated labels on installed products as required by certification program.
   4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.
   5. Replace, repair, or rework all work for which certification is refused.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.07 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 CABINETS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Faced Cabinets: Custom grade.

C. Cabinets:
   1. Finish - Exposed Exterior Surfaces: Decorative laminate.
   2. Finish - Exposed Interior Surfaces: Solid phenolic.
   3. Finish - Semi-Exposed Surfaces: Decorative laminate
   4. Door and Drawer Front Edge Profiles: Square edge with thin applied band.
   5. Door and Drawer Front Retention Profiles: Fixed panel.
   6. Casework Construction Type: Type A - Frameless.
   7. Cabinet Design Series: As indicated on drawings.
   8. Adjustable Shelf Loading: 50 lbs. per sq. ft.
      a. Deflection: L/144.
   9. Cabinet Doors and Drawer Fronts: Flush style.
   10. Drawer Construction Technique: Dovetail joints.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.03 LAMINATE MATERIALS

A. Manufacturers:
   1. Formica Corporation; ____: www.formica.com/#sle.
   2. Wilsonart LLC; ____: www.wilsonart.com/#sle.

B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

C. Provide specific types as follows:
   1. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, color as selected, satin finish.
   2. Post-Formed Horizontal Surfaces: HGP, 0.039 inch nominal thickness, through color, color as selected, satin finish.
   3. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

2.04 COUNTERTOPS

A. Countertops are specified in Section 12 3600.

2.05 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.

C. Concealed Joint Fasteners: Threaded steel.

D. Grommets: Standard rubber grommets for cut-outs, in color to blend with adjacent surface.

2.06 HARDWARE

A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.

B. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards or multiple holes for pin supports and coordinated self rests, satin chrome finish, for nominal 1 inch spacing adjustments.

C. Fixed Standard Shelf, Countertop, and Workstation Brackets:
   1. Material: Steel.
   2. Finish: Manufacturer's standard, factory-applied, textured powder coat.
   3. Color: Selected by Architect from manufacturer's standard range.
   4. Products:
      a. A&M Hardware, Inc; Standard Brackets: http://www.aandmhardware.com/#sle.

D. Drawer and Door Pulls: "U" shaped wire pull, steel with chrome finish, 4 inch centers.

E. Catches: Magnetic.

F. Drawer Slides:
   1. Type: Full extension.

2. Static Load Capacity: Commercial grade.
3. Mounting: Bottom mounted.
4. Stops: Integral type.
5. Features: Provide self closing/stay closed type.
6. Manufacturers:
    a. Knape & Vogt Manufacturing Company; Heavy-Duty Drawer Slides: www.knapeandvogt.com/#sle.
    b. Substitutions: See Section 01 6000 - Product Requirements.

G. Drawer Systems: Integrated drawer slide and side.
1. Drawer Side Height: 3-1/2 inches.
2. Drawer Length: 16 inch.
3. Static Load Capacity: Commercial grade.
4. Mounting: Bottom mounted.

H. Hinges: European style concealed self-closing type, steel with satin finish.
1. Manufacturers:
    a. Hettich America, LP; _____: www.hettich.com/#sle.
    b. Blum, Inc; _____: www.blum.com/#sle.
    c. Substitutions: See Section 01 6000 - Product Requirements.

I. Soft Close Adapter: Concealed, frame-mounted, screw-adjustable damper ; steel with polished finish.

2.07 FABRICATION

A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

B. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

C. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises.
1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
2. Cap exposed plastic laminate finish edges with material of same finish and pattern.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

C. Use fixture attachments in concealed locations for wall mounted components.

D. Use concealed joint fasteners to align and secure adjoining cabinet units.

E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

F. Secure cabinets to floor using appropriate angles and anchorages.

G. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.03 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION 06 4100

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SECTION 07 2100
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation at perimeter foundation wall.

B. Batt insulation in exterior roof construction.

C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.02 RELATED REQUIREMENTS

A. Section 07 2123 - Loose-Fill Insulation: Granular and bead insulation.

1.03 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2018.

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2017.

D. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2016a.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

1.05 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Insulation at Perimeter of Foundation: Extruded polystyrene (XPS) board.

B. Insulation in Wood Framed Ceiling Structure: Batt insulation with no vapor retarder.

C. Acoustic insulation within framing of interior partitions: Unfaced Batts, friction fit between studs.

2.02 FOAM BOARD INSULATION MATERIALS

A. Extruded Polystyrene (XPS) Board Insulation: Complies with ASTM C578 with either natural skin or cut cell surfaces.
   1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
   2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
   3. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88) per 1 inch thickness at 75 degrees F mean temperature.
   4. Board Edges: Shiplap.
   5. Manufacturers:
      a. Dow Chemical Company: www.dowbuildingsolutions.com/#sle.
      b. Kingspan Insulation LLC: www.kingspan.com/#sle.
      c. Owens Corning Corporation: www.ocbuildingspec.com/#sle.

2.03 BATT INSULATION MATERIALS

A. Where batt insulation is indicated, either glass fiber or mineral fiber batt insulation may be used, at General Contractor's option.

B. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
   1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
   4. Formaldehyde Content: Zero.
   5. Thermal Resistance: R-19 in exterior walls and between joists of wood floors; R-30 in roof.

6. Facing: Aluminum foil, flame spread 25 rated; one side.
7. Manufacturers:
    a. CertainTeed Corporation: www.certainteed.com/#sle.
    b. Johns Manville: www.jm.com/#sle.
    c. Owens Corning Corporation: www.ocbuildingspec.com/#sle.

C. Mineral Fiber Batt Insulation: Flexible or semi-rigid preformed batt or blanket, complying with ASTM C665; friction fit; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84.
1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
2. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.
3. Unfaced.
4. Thermal Resistance: R-19 in exterior walls and between joists of wood floors; R-30 in roof.
5. Manufacturers:
    a. Johns Manville: www.jm.com/#sle.
    b. Knauf Insulation: www.knaufinsulation.com/#sle.
    c. Thermafiber, Inc: www.thermafiber.com/#sle.

2.04 ACCESSORIES

A. Tape: Reinforced polyethylene film with acrylic pressure sensitive adhesive.
1. Application: Sealing of interior circular penetrations, such as pipes or cables.
2. Width: 5.9 inch.

B. Tape: Polyethylene self-adhering type, mesh reinforced, 2 inch wide.

C. Tape joints of rigid insulation in accordance with roofing and insulation manufacturers' instructions.

D. Nails or Staples: Steel wire; electroplated or galvanized; type and size to suit application.

E. Protection Board for Below Grade Insulation: Wood fiberboard, 1/4 inch thick.

F. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

A. Install boards horizontally on foundation perimeter.
1. Install in running bond pattern.
2. Butt edges and ends tightly to adjacent boards and to protrusions.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

C. Immediately following application of board insulation, place protective boards over exposed insulation surfaces.

3.03 BATT INSTALLATION

A. Install insulation in accordance with manufacturer's instructions.

B. Install in exterior roof spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

E. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

F. Provide 2" thick acoustical batts in all stud spaces of framed interior partitions.

3.04 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION 07 2100

SECTION 07 2123
LOOSE-FILL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Loose-fill insulation in cells of concrete masonry unit (CMU) walls.

1.02 RELATED REQUIREMENTS

A. Section 04 2000 - Unit Masonry: Masonry wall system to receive loose-fill insulation.

1.03 REFERENCE STANDARDS

A. ASTM C516 - Standard Specification for Vermiculite Loose Fill Thermal Insulation; 2008, with Editorial Revision (2014).

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2017.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Manufacturer's Installation Instructions: Indicate procedures for preparation and installation.

D. Submit with cmu material data as part of an integrated system.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Vermiculite Loose-Fill Insulation:
   1. Schundler Company; Edison, NJ; 732-287-2244: www.schundler.com/#sle.
   2. Specialty Vermiculite Corp; Enoree SC; 800-342-2017;.www.dicalite.com/spv/vermiculite-products/
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Vermiculite Loose-Fill Insulation: ASTM C516, vermiculite type, water repellent, fire resistant; flame spread/smoke developed index of 0/0, when tested in accordance with ASTM E84.

2.03 APPLICATIONS

A. Provide loose-fill insulation in the following application(s) as indicated on drawings:
   1. Unit masonry wall system, refer to Section 04 2000 for additional information.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate and adjacent materials are dry and ready to receive insulation.

B. Verify wall spaces are free of mortar blockage allowing for free flow of insulation.

3.02 PREPARATION

A. Verify holes and openings have been sealed to prevent escape of insulation.

3.03 INSTALLATION

A. Install loose-fill insulation in accordance with manufacturer's instructions.

B. Deposit loose-fill insulation after masonry wall has sufficiently dried to manufacturer's suggested optimum moisture content prior to covering cores with bond beams or lintels.

C. Deposit loose-fill insulation as wall is erected and completely fill spaces.

3.04 PROTECTION

A. Place temporary signs warning workers in areas that contain loose-fill insulated walls to use caution and to prevent loss of insulation when cutting into walls.

B. Protect placed insulation from moisture exposure at all times.

END OF SECTION 07 2123

SECTION 07 3113
ASPHALT SHINGLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Asphalt shingle roofing.

B. Flexible sheet membranes for eave protection and underlayment.

C. Associated metal flashings and accessories.

1.02 REFERENCE STANDARDS

A. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2017.

B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2017.

C. ASTM D3161/D3161M - Standard Test Method for Wind-Resistance of Steep Slope Roofing Products (Fan-Induced Method); 2016a.

D. ASTM D3462/D3462M - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules; 2016.

E. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007, with Editorial Revision (2012).

F. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2017.

G. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples; 2018.

H. NRCA (RM) - The NRCA Roofing Manual; 2018.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating material characteristics.

C. Shop Drawings: For metal flashings, indicate specially configured metal flashings.

D. Samples: Submit two samples of each shingle color indicating color range and finish texture/pattern; for color selection.

E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Shingles: 200 sq ft of each type and color.

1.04 QUALITY ASSURANCE

1.05 FIELD CONDITIONS

A. Do not install shingles or eave protection membrane when surface temperatures are below 45 degrees F.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Provide lifetime manufacturer's warranty for coverage against black streaks caused by algae.

D. Provide five year manufacturer's warranty for wind damage.

PART 2 PRODUCTS

2.01 ASPHALT SHINGLES

A. Asphalt Shingles: Asphalt-coated glass felt, mineral granule surfaced, complying with ASTM D3462/D3462M.
   1. Fire Resistance: Class A, complying with ASTM E108.
   2. Wind Resistance: Class A, when tested in accordance with ASTM D3161/D3161M.
   3. Warranted Wind Speed: 110 mph.

4. Algae Resistant.
5. Self-sealing type.
6. Style: Square.
7. Color: As selected by Architect.

2.02 SHEET MATERIALS

A. Eave Protection Membrane: Asphalt-saturated organic roofing felt, unperforated, complying with ASTM D226/D226M, Type I ("No.15").

B. Underlayment: Asphalt-saturated organic roofing felt, unperforated, complying with ASTM D226/D226M, Type I ("No.15").

C. Flexible Flashing: Self-adhering polymer-modified asphalt sheet complying with ASTM D1970/D1970M; 40 mil total thickness; with strippable treated release paper and polyethylene sheet top surface.

2.03 ACCESSORIES

A. Roofing Nails: Standard round wire shingle type, galvanized steel, minimum 3/8 inch head diameter, 12 gage, 0.109 inch nail shank diameter, 1-1/2 inch long and complying with ASTM F1667.

B. Plastic Cement: ASTM D4586/D4586M, asphalt roof cement.

C. Ridge Vents: Plastic, extruded with vent openings that do not permit direct water or weather entry; flanged to receive shingles; Cobra Rigid Vent 3 manufactured by GAF.
   1. Substitutions permitted by prior request & approval of Architect.

2.04 METAL FLASHINGS

A. Metal Flashings: Provide sheet metal eave edge and gable edge.
   1. Form flashings to protect roofing materials from physical damage and shed water.
   2. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.
   3. Hem exposed edges of flashings minimum 1/4 inch on underside.
   4. Coat concealed surfaces of flashings with bituminous paint.

B. Steel Sheet Metal: Prefinished and galvanized steel sheet, 26 gage, 0.0179 inch minimum thickness, G90/Z275 hot-dipped galvanized; PVC coated, _____ color.

C. Bituminous Paint: Acid and alkali resistant type; black color.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions prior to beginning work.

B. Verify that roof deck is of sufficient thickness to accept fasteners.

C. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.

D. Verify deck surfaces are dry, free of ridges, warps, or voids.

3.02 PREPARATION

A. Broom clean deck surfaces before installing underlayment or eave protection.

B. Install eave edge flashings tight with fascia boards. Weather lap joints 2 inches and seal with plastic cement. Secure flange with nails spaced eight inches on center.

3.03 INSTALLATION - EAVE PROTECTION MEMBRANE

A. Install eave protection membrane from eave edge to minimum 4 ft up-slope beyond interior face of exterior wall.

B. Install eave protection membrane in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.

3.04 INSTALLATION - UNDERLAYMENT

A. Underlayment At Roof Slopes Up to 4:12: Install two layers of underlayment over entire roof area, with ends and edges weather lapped minimum 4 inches. Stagger end laps of each consecutive layer. Nail in place.

B. Underlayment At Roof Slopes Greater Than 4:12: Install underlayment perpendicular to slope of roof, with ends and edges weather lapped minimum 4 inches, stagger end laps of each consecutive layer, nail in place, and weather lap minimum 4 inches over eave protection.

C. Weather lap and seal watertight with plastic cement any items projecting through or mounted on roof.

3.05 INSTALLATION - METAL FLASHING AND ACCESSORIES

A. Install flashings in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.

B. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.

C. Secure in place with nails at six inches on center. Conceal fastenings.

D. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.

3.06 INSTALLATION - SHINGLES

A. Install shingles in accordance with manufacturer's instructions manufacturer's instructions and NRCA (RM) applicable requirements.
   1. Fasten individual shingles using two nails per shingle, or as required by manufacturer and local building code, whichever is greater.
   2. Fasten strip shingles using four nails per strip, or as required by manufacturer and local building code, whichever is greater.

B. Place shingles in straight coursing pattern with 5 inch weather exposure to produce double thickness over full roof area, and provide double course of shingles at eaves.

C. Project first course of shingles 3/4 inch beyond fascia boards.

D. Extend shingles 1/2 inch beyond face of gable edge fascia boards.

E. Complete installation to provide weather tight service.

3.07 PROTECTION

A. Do not permit traffic over finished roof surface.

END OF SECTION 07 3113

SECTION 07 4113
METAL ROOF PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural roofing system of preformed steel panels.

1.02 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.

B. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; 2016.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2017.

E. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference; 2005 (Reapproved 2017).

F. ASTM E1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference; 1995 (Reapproved 2018).

G. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Storage and handling requirements and recommendations.
   2. Installation methods.
   3. Specimen warranty.

C. Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.
   1. Show work to be field-fabricated or field-assembled.

D. Selection Samples: For each roofing system specified, submit color chips representing manufacturer's full range of available colors and patterns.

E. Test Reports: Indicate compliance of metal roofing system to specified requirements.

F. Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in Owner's name and are registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience and approved by manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store roofing panels on project site as recommended by manufacturer to minimize damage to panels prior to installation.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Finish Warranty: Provide manufacturer's special warranty covering failure of factory-applied exterior finish on metal roof panels and agreeing to repair or replace panels that show evidence of finish degradation, including significant fading, chalking, cracking, or peeling within specified warranty period of five years from Date of Substantial Completion.

C. Waterproofing Warranty: Provide manufacturer's warranty for weathertightness of roofing system, including agreement to repair or replace roofing that fails to keep out water within specified warranty period of five years from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design:
   1. Metal Roof Panels: PBU Panel; 36" wide manufactured by Metal Sales Manufacturing.
      a. 1306 South Powell Road; Independence, MO 64057 800.747.0012

2.02 STRUCTURAL METAL ROOF PANELS

A. Structural Metal Roofing: Provide complete roofing assemblies, including roof panels, clips, fasteners, connectors, and miscellaneous accessories, tested for compliance with the following minimum standards:
   1. Structural Design Criteria: Provide panel assemblies designed to safely support design loads at support spacing indicated, with deflection not to exceed L/180 of span length(L) when tested in accordance with ASTM E1592.
      a. Dead Loads: Weight of roofing system.
      b. Live Loads: As required by ASCE 7.
   2. Overall: Complete weathertight system tested and approved in accordance with ASTM E1592.
   3. Wind Uplift: Class 90 wind uplift resistance of UL 580.
   4. Water Penetration: No water penetration when tested according to procedures and recommended test pressures of ASTM E1646. Perform test immediately following air infiltration test.
   5. Thermal Movement: Design system to accommodate without deformation anticipated thermal movement over ambient temperature range of 100 degrees F.

B. Metal Panels: Factory-formed panels with factory-applied finish.
   1. Type: Single skin, uninsulated.
   2. Steel Panels:
      a. Zinc-coated SS (structural steel) sheet complying with ASTM A653/A653M; minimum G60 galvanizing.
      b. Steel Thickness: Minimum 26 gage (0.179 inch).
   3. Profile: Lapped seam, with integral sealant bead and exposed fastener system.
   4. Texture: Smooth.
   5. Length: Full length of roof slope, without lapped horizontal joints.
   6. Width: Maximum panel coverage of 16 inches.

2.03 ATTACHMENT SYSTEM

A. Exposed System: Provide manufacturer's recommended stainless steel fasteners engineered to meet performance requirements and equipped with appropriate sealant separators to provide weathertight connections that will accommodate anticipated thermal movement.

2.04 FINISHES

A. Fluoropolymer Coil Coating System: Manufacturer's standard multi-coat aluminum coil coating system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of coil coated aluminum surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss to match sample.

2.05 ACCESSORIES

A. Miscellaneous Sheet Metal Items: Provide flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, and equipment curbs of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.

B. Rib and Ridge Closures: Provide prefabricated, close-fitting components of steel with corrosion resistant finish or combination steel and closed-cell foam.

C. Sealants:
   1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
   2. Concealed Sealant: Non-curing butyl sealant or tape sealant.

D. Thermal Insulation: Provide flexible blanket, rigid, or semi-rigid type, faced with white, flexible, non-dusting vapor retarder tested for maximum flame spread index of 50, per ASTM E84; for installation using spacer blocks.
   1. Thickness: As indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation of preformed metal roof panels until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Coordinate roofing work with provisions for roof drainage, flashing, trim, penetrations, and other adjoining work to assure that the completed roof will be free of leaks.

B. Separate dissimilar metals by applying a bituminous coating, self-adhering rubberized asphalt sheet, or other permanent method approved by roof panel manufacturer.

C. Where metal will be in contact with wood or other absorbent material subject to wetting, seal joints with sealing compound and apply one coat of heavy-bodied bituminous paint.

3.03 INSTALLATION

A. Overall: Install roofing system in accordance with approved shop drawings and panel manufacturer's instructions and recommendations, as applicable to specific project conditions. Anchor all components of roofing system securely in place while allowing for thermal and structural movement.
   1. Install roofing system with exposed fasteners prefinished to match panels.
   2. Minimize field cutting of panels. Where field cutting is absolutely required, use methods that will not distort panel profiles. Use of torches for field cutting is absolutely prohibited.

B. Accessories: Install all components required for a complete roofing assembly, including flashings, gutters, downspouts, trim, moldings, closure strips, caps, rib closures, ridge closures, and similar roof accessory items.

C. Roof Panels: Install panels in strict accordance with manufacturer's instructions, minimizing transverse joints except at junction with penetrations.

D. Insulation: Install insulation between roof covering and supporting members to present a neat appearance. Fold, staple, and tape seams unless otherwise approved by Architect.

3.04 CLEANING

A. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving the work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to the finish.

3.05 PROTECTION

A. Do not permit storage of materials or roof traffic on installed roof panels. Provide temporary walkways or planks as necessary to avoid damage to completed work. Protect roofing until completion of project.

B. Touch-up, repair, or replace damaged roof panels or accessories before Date of Substantial Completion.

END OF SECTION 07 4113

SECTION 07 4642

VINYL AND POLYMER SIDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Vinyl siding, Polymer shake and shingle siding.

B. Vinyl soffits.

C. Accessories and trim.

1.02 RELATED SECTIONS

A. Section 06100 - Framing and Sheathing.

B. Section 07260 - Vapor Retarders.

C. Section 07900 - Joint Sealers.

1.03 REFERENCES

A. ASTM D7793 – Standard Specification for Insulated Vinyl Siding

B. ASTM D 3679 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Siding.

C. ASTM D 4477 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Soffit.

D. ASTM D 5206 - Standard Windload Resistance Test.

E. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

F. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

G. ASTM D7254 – Standard Specification for Polypropylene (PP) Siding

1.04 DESIGN/PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Code compliance in accordance with the following:

B. IBC and IRC

C. Florida Building Code

D. National Building Code of Canada

E. PVC Fire Resistance: Provide vinyl siding products that meet or exceed the following ratings:

F. Flame Spread Index < 25, per ASTM E 84.

G. Fire endurance classification of 1 hour, per ASTM E 119 in a wall assembly.

H. Cedar Impressions Shake and Shingle Siding Fire Resistance: Provide thermoplastic polyolefin siding products that meet or exceed the following ratings:

I. Flame Spread Index <200 per ASTM E-84.

1.05 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

C. Preparation instructions and recommendations.

D. Storage and handling requirements and recommendations.

E. Installation methods.

F. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

G. Verification Samples: For each finish product specified, two samples, minimum size 12 inches (300 mm) long, representing actual product, color, and patterns.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Provide installer with not less than three years of experience with products specified or has obtained 5-Star Green Contractor (Preferred), 5-Star Contractor (preferred), or Master Craftsman credentials from CertainTeed.

B. Mock-Up: Provide a mock-up for evaluation of installation techniques and workmanship.

C. Finish areas designated by Architect.

D. Do not proceed with remaining work until workmanship and color is approved by Architect.

E. Reinstall mock-up area as required to produce acceptable work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation. Refer to manufacturer's installation instructions for specific storage and handling requirements.

1.08 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.09 WARRANTY

A. Provide manufacturer's standard lifetime limited warranty on siding products, transferable to new owners.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer: CertainTeed LLC, Siding Products Group, 20 Moores Road, Malvern, Pennsylvania 19355. Tel: (800) 233-8990; Email: salessupportgroup@certainteed.com; Web: www.certainteed.com.

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.02 MATERIALS

A. Polymer Shakes and Shingle Siding: Provide products made of molded polypropylene as specified in this section and manufactured to comply with requirement of ASTM D 7254
   1. Provide elongated nailing slots on nailing flanges to allow movement
   2. Provide products that meet weathering requirements of ASTM D 7254
   3. In accordance with ICC – ES Acceptance Criteria AC366
   4. Provide panel thermometer allowing for proper spacing in various temperatures

B. Cedar Impressions Individual 5" Sawmill Shingles:
   1. Design: Individual 5 inch (127 mm) shingle; sawmill finish.
   2. Lock: N/A – hard nailed/stapled
   3. Height: 12 inch (304.8 mm).
   4. Width: Ranges from 4 inch (101.6 mm) to 8 inch (203.2 mm).
   5. Average Thickness: 0.090 inch (2.29 mm).
   6. Panel Projection: 1 inch (25.4 mm).
   7. Panel Exposure: 5 inches (127 mm)
   8. Maximum Warp: 0.250 inch (6 mm).
   9. Ageless Cedar™ Color Technology: color solid throughout the panel (including blended colors)
   10. Color: As selected by Architect from manufacturer's standards.

C. VINYL CARPENTRY ACCESSORIES
   1. 1-1/4 Inch Pocket Accessories:
      a. Band Board: 7-1/4" (184 mm) width by 16'8" (5.08m) length
      b. Finish Board: 3-1/2" (88.9mm) width by 12'6" 3.81 m) length
      c. Color: refer to CTS002 for color availability of accessories

D. FASTENERS
   1. Provide galvanized or other corrosion-resistant nails as recommended by manufacturer of siding products.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
   1. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Examine, clean, and repair as necessary any substrate conditions which would be detrimental to proper installation.

B. Do not begin installation until unacceptable conditions have been corrected.

3.03 INSTALLATION

A. Install products in accordance with the latest printed instructions of the manufacturer.

B. Install products with all components true and plumb.

3.04 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

3.05 CLEANING

A. At completion of work, remove debris caused by siding installation from project site.

END OF SECTION 07 4642

SECTION 07 4646
FIBER-CEMENT SIDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fiber-cement siding.

1.02 REFERENCE STANDARDS

A. ASTM C1186 - Standard Specification for Flat Fiber Cement Sheets; 2008 (Reapproved 2016).

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
   1. Manufacturer's requirements for related materials to be installed by others.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Installation methods, including nail patterns.

C. Warranty: Submit copy of manufacturer’s warranty, made out in Owner’s name, showing that it has been registered with manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products under waterproof cover and elevated above grade, on a flat surface.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide multi-year manufacturer warranty as indicated under Siding article sub-heading "Warranty".

PART 2 PRODUCTS

2.01 FIBER-CEMENT SIDING

A. Lap Siding: Individual horizontal boards made of cement and cellulose fiber formed under high pressure with integral surface texture, complying to ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
   1. Style: Standard lap style.
   2. Texture: Simulated rough sawn grain.
   3. Length: 12 ft, nominal.
   4. Width (Height): 5-1/4 inches.
   5. Thickness: 5/16 inch, nominal.
   6. Finish: Factory applied primer.
   7. Warranty: 50 year limited; transferable.
   8. Manufacturers:
      a. James Hardie Building Products, Inc; _____: www.jameshardie.com/#sle.
      b. Nichiha USA, Inc; _____: www.nichiha.com/#sle.

2.02 ACCESSORIES

A. Furring Strips: Galvanized metal channels.

B. Trim: Same material and texture as siding.

C. Fasteners: Galvanized or corrosion resistant; length as required to penetrate minimum 1-1/4 inch.

D. Finish Paint: Latex house paint acceptable to siding manufacturer; primer recommended by paint manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.

B. Do not begin until unacceptable conditions have been corrected.

C. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions and recommendations.
   1. Read warranty and comply with terms necessary to maintain warranty coverage.
   2. Use trim details indicated on drawings.
   3. Touch up field cut edges before installing.
   4. Pre-drill nail holes if necessary to prevent breakage.

B. Over Wood and Wood-Composite Sheathing: Fasten siding through sheathing into studs.

C. Over Masonry Walls: Install furring strips of adequate thickness to accept full length of nails and spaced at 16 inches on center; leave space at top and bottom open.

D. Over Steel Studs: Use hot-dipped galvanized self-tapping screws, with the points of at least three screws penetrating each stud the panel crosses and at panel ends.

E. Joints in Horizontal Siding: Avoid joints in lap siding except at corners; where joints are inevitable stagger joints between successive courses.

F. After installation, seal joints except lap joints of lap siding; seal around penetrations, and paint exposed cut edges.

G. Finish Painting: Within one week after installation, paint siding and trim with one coat primer and two coats finish paint.

3.03 PROTECTION

A. Protect installed products until Date of Substantial Completion.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION 07 4646

SECTION 07 6200

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, gutters, and downspouts.

B. Sealants for joints within sheet metal fabrications.

1.02 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.

D. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007, with Editorial Revision (2012).

E. CDA A4050 - Copper in Architecture - Handbook; current edition.

F. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

C. Samples: Submit two samples 4 x 4 inch in size illustrating metal finish color.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

A. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24 gage, (0.0239) inch thick base metal, shop pre-coated with PVDF coating.

1. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
2. Color: As selected by Architect from manufacturer's standard colors.

2.02 PRE-FINISHED ALUMINUM SOFFIT

A. Stealth Vent Soffit by Rollex; Elk Grove Village, IL; 800-251-3300

B. Color to be selected by Architect from manufacturer's standard range.

2.03 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch; miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.

F. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

2.04 GUTTER AND DOWNSPOUT FABRICATION

A. Gutters: SMACNA (ASMM), Rectangular profile.

B. Downspouts: Rectangular profile.

C. Gutters and Downspouts: Size for rainfall intensity determined by a storm occurrence of 1 in 10 years in accordance with SMACNA (ASMM).

D. Accessories: Profiled to suit gutters and downspouts.
   1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
   2. Gutter Supports: Brackets.
   3. Downspout Supports: Brackets.

E. Downspout Extenders: Same material and finish as downspouts.

F. Seal metal joints.

2.05 ACCESSORIES

A. Fasteners: Galvanized steel, with soft neoprene washers.

B. Primer: Zinc chromate type.

C. Concealed Sealants: Non-curing butyl sealant.

D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

E. Plastic Cement: ASTM D4586/D4586M, Type I.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION

A. Secure flashings in place using concealed fasteners.

B. Apply plastic cement compound between metal flashings and felt flashings.

C. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

D. Seal metal joints watertight.

E. Secure gutters and downspouts in place with concealed fasteners.

F. Slope gutters 1/4 inch per 10 feet, minimum.

G. Connect downspouts to storm sewer system, and seal connection watertight.

END OF SECTION 07 6200

SECTION 07 7100
ROOF SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Manufactured roof specialties, including copings and fascias.

1.02 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.

B. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2017.

C. NRCA (RM) - The NRCA Roofing Manual; 2018.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.

C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.

D. Samples: Submit two appropriately sized samples of coping.

PART 2 PRODUCTS

2.01 COMPONENTS

A. Roof Edge Flashings: Factory fabricated to sizes required; mitered, welded corners; concealed fasteners.
   1. Configuration: Fascia, cant, and edge securement for roof membrane.
   2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test methods RE-1 and RE-2 to positive and negative design wind pressure as defined by applicable local building code.
   3. Material: Formed steel sheet, galvanized, 24 gage, 0.024 inch thick, minimum.
   4. Finish: 70 percent polyvinylidene fluoride.
   5. Color: To be selected by Architect from manufacturer's standard range.

B. Copings: Factory fabricated to sizes required; mitered, welded corners; concealed fasteners.
   1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness and finish as cap; concealed stainless steel fasteners.
   2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test method RE-3 to positive and negative design wind pressure as defined by applicable local building code.
   3. Material: Formed steel sheet, galvanized, 24 gage, 0.024 inch thick, minimum.
   4. Finish: 70 percent polyvinylidene fluoride.
   5. Color: To be selected by Architect from manufacturer's standard range.

C. Pipe Penetration Wall Seal: Seal for HVAC piping wall penetrations with wall mounted rigid plastic outlet cover and elastomeric wall seal gasket.
   1. Outlet Cover Color: Gray.

2.02 FINISHES

A. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; color as selected from manufacturer's standard colors.

2.03 ACCESSORIES

A. Sealant for Joints in Linear Components: As recommended by component manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

3.02 INSTALLATION

A. Install components in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.

B. Seal joints within components when required by component manufacturer.

END OF SECTION 07 7100

SECTION 07 9200
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

1.02 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015.

B. ASTM C834 - Standard Specification for Latex Sealants; 2014.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.

E. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).

F. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2018.

G. SCAQMD 1168 - Adhesive and Sealant Applications; 1989 (Amended 2017).

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   4. Substrates the product should not be used on.

C. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

1.04 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a two year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 JOINT SEALANT APPLICATIONS

A. Scope:
   1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
      a. Wall expansion and control joints.
      b. Joints between door, window, and other frames and adjacent construction.
      c. Joints between different exposed materials.
   2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
      a. Joints between door, window, and other frames and adjacent construction.
      b. Joints between countertops or cabinets and adjacent construction.
   3. Do not seal the following types of joints.
      a. Intentional weepholes in masonry.
      b. Joints where sealant is specified to be provided by manufacturer of product to be sealed.

c. Joints between suspended panel ceilings/grid and walls.

B. Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.

C. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
2. Floor Joints in Wet Areas: Self-leveling polyurethane "traffic-grade" sealant suitable for continuous liquid immersion.
3. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
4. Narrow Control Joints in Interior Concrete Slabs: Self-leveling polyurethane sealant.
5. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant.

D. Interior Wet Areas: Bathrooms, restrooms, kitchens, food service areas, and food processing areas; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.

2.02 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

2.03 NONSAG JOINT SEALANTS

A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: 35, minimum.
2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
4. Color: Match adjacent finished surfaces.
5. Cure Type: _____.

B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: to be selected.

C. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus ____ percent, minimum.
2. Color: To be selected by Architect from manufacturer's standard range.

D. Non-Sag "Traffic-Grade" Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion and traffic without the necessity to recess sealant below traffic surface.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Hardness Range: 40 to 50, Shore A, when tested in accordance with ASTM C661.

E. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
1. Color: Standard colors matching finished surfaces, Type OP (opaque).

2.04 SELF-LEVELING SEALANTS

A. Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single or multi-component; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Color: Gray.

B. Rigid Self-Leveling Polyurethane Joint Filler: Two part, low viscosity, fast setting; intended for cracks and control joints not subject to significant movement.
1. Hardness Range: Greater than 100, Shore A, and 50 to 80, Shore D, when tested in accordance with ASTM C661.

2.05 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.

1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
3. Open Cell: 40 to 50 percent larger in diameter than joint width.
4. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.

E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.

D. Install bond breaker backing tape where backer rod cannot be used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.04 POST-OCCUPANCY

A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

END OF SECTION 07 9200

SECTION 08 1113
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Hollow metal frames for wood doors.

C. Thermally insulated hollow metal doors with frames.

D. Hollow metal borrowed lites glazing frames.

E. Accessories, including glazing.

1.02 RELATED REQUIREMENTS

A. Section 08 7100 - Door Hardware.

B. Section 09 9113 - Exterior Painting: Field painting.

C. Section 09 9123 - Interior Painting: Field painting.

1.03 ABBREVIATIONS AND ACRONYMS

A. ANSI: American National Standards Institute.

B. ASCE: American Society of Civil Engineers.

C. HMMA: Hollow Metal Manufacturers Association.

D. NAAMM: National Association of Architectural Metal Manufacturers.

E. SDI: Steel Door Institute.

F. UL: Underwriters Laboratories.

1.04 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.

C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2011.

D. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2003 (R2009).

E. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2017.

F. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.

G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.

H. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2016.

I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.

J. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2016.

K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

L. NAAMM HMMA 805 - Recommended Selection and Usage Guide for Hollow Metal Doors and Frames; 2012.

M. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.

N. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.

O. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; 2007.

P. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

Q. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2013.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

D. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

B. Maintain at project site copies of reference standards relating to installation of products specified.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
1. Ceco Door, an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
2. Curries, an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
3. Mesker, dormakaba Group; FDJ Series Drywall Frames: www.meskeropeningsgroup.com/#sle.
4. Republic Doors; ____: www.republicdoor.com.
5. Steelcraft, an Allegion brand; ____: www.allegion.com/#sle.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
2. Accessibility: Comply with ICC A117.1 and ADA Standards.
3. Door Top Closures: Flush end closure channel, with top and door faces aligned.
4. Typical Door Face Sheets: Flush.
5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturers standard.
6. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
7. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
    a. Based on NAAMM HMMA Custom Guidelines: Provide at least A25/ZF75 (galvannealed) for interior applications, and at least A60/ZF180 (galvannealed) or G60/Z180 (galvanized) for corrosive locations.
8. Finish: Factory primed, for field finishing.

2.03 HOLLOW METAL DOORS

A. Door Finish: Factory primed and field finished.

B. Exterior Doors: Thermally insulated.
   1. Based on NAAMM HMMA Custom Guidelines:
      a. Comply with guidelines of NAAMM HMMA 861 for Commercial Hollow Metal Doors and Frames.
      b. Performance Level 3 - Heavy Duty, in accordance with NAAMM HMMA 805.
      c. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
      d. Door Face Metal Thickness: 18 gage, 0.042 inch, minimum.
      e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
   2. Door Core Material: Vertical steel stiffeners with fiberglass batts.
   3. Door Thickness: 1-3/4 inch, nominal.
   4. Weatherstripping: Refer to Section 08 7100.

C. Interior Doors, Non-Fire Rated:
   1. Based on NAAMM HMMA Custom Guidelines:
      a. Comply with guidelines of NAAMM HMMA 861 for Commercial Hollow Metal Doors and Frames.
      b. Performance Level 3 - Heavy Duty, in accordance with NAAMM HMMA 805.
      c. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
      d. Door Face Metal Thickness: 20 gage, 0.032 inch, minimum.
   2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
   3. Door Thickness: 1-3/4 inch, nominal.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. General:
   1. Comply with the requirements of grade specified for corresponding door.
   2. Finish: Same as for door.

D. Exterior Door Frames: Face welded type.
   1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
   2. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
   3. Weatherstripping: Separate, see Section 08 7100.

E. Interior Door Frames, Non-Fire Rated: Slip-on type at gypsum board walls, and knock-down type at masonry walls.
   1. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.

F. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.

G. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

H. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

I. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inch high to fill opening without cutting masonry units.

2.05 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

2.06 ACCESSORIES

A. Glazing: Clear sheet glass, 1/4 inch (6 mm) thick, factory installed.

B. Removable Stops: Formed sheet steel, mitered corners; prepared for countersink style tamper proof screws.

C. Grout for Frames: Portland cement grout with maximum 4 inch slump for hand troweling; thinner pumpable grout is prohibited.

D. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

E. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Coordinate frame anchor placement with wall construction.

C. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

D. Install door hardware as specified in Section 08 7100.

1. Comply with recommended practice for hardware placement of doors and frames in accordance with ANSI/SDI A250.6 or NAAMM HMMA 861.

3.04 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

3.06 SCHEDULE

A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION 08 1113

SECTION 08 1416
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush wood doors; flush and flush glazed configuration; non-rated.

1.02 RELATED REQUIREMENTS

A. Section 08 1113 - Hollow Metal Doors and Frames.

B. Section 08 7100 - Door Hardware.

1.03 REFERENCE STANDARDS

A. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2016).

C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2016, with Errata (2017).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.

D. Samples: Submit two samples of door veneer, four by four inch in size illustrating _____.

E. Manufacturer's Installation Instructions: Indicate special installation instructions.

F. Specimen warranty.

G. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging. Inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Interior Doors: Provide manufacturer's warranty for 2 years.

C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:
   1. Eggers Industries; ____: www.eggersindustries.com/#sle.
   2. Graham Wood Doors; _____: www.grahamdoors.com/#sle.
   3. Marshfield DoorSystems, Inc; ____: www.marshfielddoors.com/#sle.

2.02 DOORS

A. Doors: Refer to drawings for locations and additional requirements.
   1. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
   2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at each location.

2.03 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

2.04 DOOR FACINGS

A. Veneer Facing for Transparent Finish: Red oak, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.
   1. Vertical Edges: Same species as face veneer.
   2. "Pair Match" each pair of doors; "Set Match" pairs of doors within 10 feet of each other when doors are closed.

2.05 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

C. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

D. Provide edge clearances in accordance with the quality standard specified.

2.06 FACTORY FINISHING - WOOD VENEER DOORS

A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Transparent:
      a. System - 5, Varnish, Conversion.
      b. Stain: As selected by Architect.
      c. Sheen: Satin.

2.07 ACCESSORIES

A. Hollow Metal Door Frames: As specified in Section 08 1113.

B. Glazed Openings:
   1. Heat-Strengthened and Fully Tempered Glass: ASTM C1048.
   2. Glazing: Single vision units, 1/4 inch thick glass.
   3. Tint: Clear.

C. Glazing Stops: Wood, of same species as door facing, mitered corners; prepared for countersink style tamper proof screws.

D. Door Hardware: As specified in Section 08 7100.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

E. Coordinate installation of glazing.

3.03 TOLERANCES

A. Comply with specified quality standard for fit and clearance tolerances.

B. Comply with specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

3.05 SCHEDULE - SEE DRAWINGS

END OF SECTION 08 1416

SECTION 08 3100
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall and ceiling access door and frame units.

B. Wall & Ceiling access door & frame units where required by code to reach valving or junctions.
   1. No access doors are specifically required in the plans; this section applicable only where building codes require access to a particular system, fitting, valve or part.

1.02 RELATED REQUIREMENTS

A. Section 09 9123 - Interior Painting: Field paint finish.

1.03 REFERENCE STANDARDS

A. ITS (DIR) - Directory of Listed Products; current edition.

B. UL (FRD) - Fire Resistance Directory; current edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

C. Shop Drawings: Indicate exact position of each access door and/or panel unit.

D. Project Record Documents: Record actual locations of each access unit.

PART 2 PRODUCTS

2.01 ACCESS DOORS AND PANELS ASSEMBLIES

A. Wall-Mounted Units:
   1. Size: 12 inch by 12 inch.
   2. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
   3. Tool-operated spring or cam lock; no handle.
   4. Gypsum Board Mounting Criteria: Provide drywall bead frame with door surface flush with wall surface.

B. Wall-Mounted Units in Wet Areas:
   1. Size: 12 inch by 12 inch.
   2. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
   3. Tool-operated spring or cam lock; no handle.
   4. Gypsum Board Mounting Criteria: Provide drywall bead frame with door surface flush with wall surface.

C. Ceiling-Mounted Units:
   1. Size - Other Ceilings: 12 inch by 12 inch.
   2. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
   3. Tool-operated spring or cam lock; no handle.

2.02 WALL AND CEILING MOUNTED UNITS

A. Manufacturers:
   1. ACUDOR Products Inc: www.acudor.com/#sle.
   2. Babcock-Davis; _____: www.babcockdavis.com/#sle.
   3. Karp Associates, Inc; ____: www.karpinc.com/#sle.
   4. Milcor, Inc; ____: www.milcorinc.com/#sle.

B. Wall and Ceiling Mounted Units: Factory fabricated door and frame, fully assembled units with corner joints welded, filled and ground flush; square and without rack or warp; coordinate requirements with type of installation assembly being used for each unit.
   1. Material: Steel.
   2. Style: Exposed frame with door surface flush with frame surface.
   3. Door Style: Single thickness with rolled or turned in edges.
   4. Frames: 16 gage, 0.0598 inch, minimum thickness.

5. Heavy Duty Single Steel Sheet Door Panels: 14 gage, 0.0747 inch, minimum thickness.
6. Steel Finish: Primed.
7. Hardware:
    a. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
    b. Gasketing: Extruded neoprene, around perimeter of door panel.

2.03 CEILING GYPSUM BOARD ACCESS PANELS

A. Gypsum Board Access Panels: Provide rectangular and square access panel with recessed and gasketed aluminum perimeter frame that acts as finishing edge and having concealed mechanical touch-latch with safety cable and free-pivoting hinge.
    1. Rectangular Panel Frame Size: 24 by 36 inch set within 1/2 inch thick gypsum board.
    2. Square Panel Frame Size: 24 by 24 inch set within 1/2 inch thick gypsum board.
    3. Panel Frame: 1 inch margin with concealed countersunk screw mounting.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install frames plumb and level in openings, and secure units rigidly in place.

C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION 08 3100

SECTION 08 3613
SECTIONAL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Overhead sectional doors, electrically operated.

B. Operating hardware and supports.

C. Electrical controls.

1.02 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.

B. ASTM C1036 - Standard Specification for Flat Glass; 2011.

C. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.

D. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.

E. DASMA 102 - American National Standard Specifications for Sectional Overhead Type Doors; 2011.

F. ITS (DIR) - Directory of Listed Products; current edition.

G. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2000, with Errata (2008).

H. NEMA MG 1 - Motors and Generators; 2017.

I. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2014.

J. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

K. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

L. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, and hardware locations.

C. Product Data: Show component construction, anchorage method, and hardware.

D. Samples: Submit two panel finish samples, ___ by ___ inch in size, illustrating color and finish.

E. Manufacturer's Installation Instructions: Include any special procedures required by project conditions.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of type specified and with at least three years documented experience.

B. Products Requiring Electrical Connection: Listed and classified by ITS (DIR) or UL (DIR), as suitable for purpose specified.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals for warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for electric motor and transmission.

D. Provide five year manufacturer warranty for electric operating equipment.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: 591 Series Thermacore Steel Sectional Door manufactured by Overhead Door Corp.
   1. Overhead Door Company of St. Louis; 12046 Lackland Road; St. Louis, MO 63119

2. 314-781-5200

B. Other Acceptable Manufacturers - Sectional Doors:
   1. C.H.I. Overhead Doors: www.chiohd.com/#sle.
   2. Clopay Building Products: www.clopaydoor.com/#sle.
   3. Raynor Garage Doors; ____: www.raynor.com/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 STEEL DOORS

A. Steel Doors: Stile and rail steel with glazed panels; center mount operating style with track and hardware; complying with DASMA 102, Commercial application.
   1. Performance: Withstand positive and negative wind loads equal to 1.5 times design wind loads specified by local code without damage or permanent set, when tested in accordance with ASTM E330/E330M, using 10 second duration of maximum load.
   2. Door Nominal Thickness: 1-3/4 inches thick.
   3. R-Value: 14.8 U-Value: 0.067
   4. Exterior Finish: Factory finished with acrylic baked enamel; White.
   5. Interior Finish: Factory finished with acrylic baked enamel; white color.
   6. Glazed Lights: Full panel width, one row; set in place with resilient glazing channel.
      a. 1/8" double strength glass.
   7. Electric Operation: Electric control station.

B. Door Panels: Stile and rail construction, of steel sheet 0.058 inch minimum thickness, with welded joints; rabbeted weather joints at meeting rails.

C. Window Frame: To match door panels, finish to match.

D. Glazing: Annealed float glass; single pane; clear; 1/4 inch overall thickness.

2.03 COMPONENTS

A. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.

B. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.

C. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.

D. Sill Weatherstripping: Resilient hollow rubber strip, one piece; fitted to bottom of door panel, full length contact.

E. Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.

F. Head Weatherstripping: EPDM rubber seal, one piece full length.

G. Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.

H. Lock: Inside center mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle.

I. Springs: 100,000 cycles.

2.04 MATERIALS

A. Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G60/Z180 coating, plain surface.

B. Float Glass: Provide float glass glazing, unless noted otherwise.
   1. Annealed Type: ASTM C1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select).
   2. Heat-Strengthened and Fully Tempered Types: ASTM C1048.

C. Insulation: Foamed-in-place polyurethane.
   1. R-value of 14.86.

D. Trim: Pre-finished galvanized metal trim to cover all exposed wood blocking associated with OH Door install.

2.05 ELECTRIC OPERATION

A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR) or UL (DIR).

1. Provide interlock switches on motor operated units.

B. Electric Operators:
1. Mounting: Center mounted on cross head shaft.
2. Motor Enclosure:
a. Exterior Doors: NEMA MG 1, Type 4; open drip proof.
3. Motor: size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second
4. Motor Voltage: 120 volts, single phase, 60 Hz.
5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
6. Controller Enclosure: NEMA 250, Type 1.
7. Opening Speed: 12 inches per second.
8. Brake: Adjustable friction clutch type, activated by motor controller.
9. Manual override in case of power failure.

C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated; enclose terminal lugs in terminal box sized to comply with NFPA 70.

D. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325.
1. 24 volt circuit.
2. Surface mounted, at interior door jamb.
3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
a. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.

E. Disconnect Switch: Factory mount disconnect switch in control panel.

F. Safety Edge: Located at bottom of sectional door panel, full width; electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object; hollow neoprene covered to provide weatherstrip seal.

G. Provide radio control antenna detector.

H. Hand Held Transmitter: Digital control, and resettable.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

B. Verify that electric power is available and of the correct characteristics.

3.02 PREPARATION

A. Prepare opening to permit correct installation of door unit to perimeter air and vapor barrier seal.

B. Apply primer to wood frame.

3.03 INSTALLATION

A. Install door unit assembly in accordance with manufacturer's instructions.

B. Install overhead doors and track in accordance with approved shop drawings and the manufacturer’s printed instructions.

C. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.

D. Anchor assembly to wall construction and building framing without distortion or stress.

E. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

F. Fit and align door assembly including hardware.

G. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

H. Install perimeter trim.

3.04 TOLERANCES

A. Maximum Variation from Plumb: 1/16 inch.

B. Maximum Variation from Level: 1/16 inch.

C. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.

D. Maintain dimensional tolerances and alignment with adjacent work.

3.05 ADJUSTING

A. Adjust door assembly for smooth operation and full contact with weatherstripping.

B. Have manufacturer's field representative present to confirm proper operation and identify adjustments to door assembly for specified operation.

3.06 CLEANING

A. Clean doors and frames and glazing.

B. Remove temporary labels and visible markings.

3.07 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

B. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

C. Touch-up, damaged coatings and finishes and repair minor damage before Substantial Completion.

END OF SECTION 08 3613

SECTION 08 5313
VINYL WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Vinyl-framed, factory-glazed windows.

1.02 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights; 2017.

B. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2007 (Reapproved 2016).

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide component dimensions, anchors, fasteners, glass, and internal drainage.

C. Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related work, and installation requirements.

D. Selection Samples: 2" x 2" of each available color.

E. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:
   1. Evidence of AAMA Certification.
   2. Evidence of WDMA Certification.
   3. Evidence of CSA Certification.
   4. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.

F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect finished surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.

B. Jig, brace, and box the window frame assemblies for transport to minimize flexing of members or joints.

1.05 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F.

B. Maintain this minimum temperature during and after installation of sealants.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Provide five year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same. Include coverage for degradation of color finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Vinyl Windows:
   1. Quaker Commercial Windows & Doors; Freeburg, MO 1-800-347-0438; www.QuakerCommercialWindows.com.
      a. Crusader Series; casement.
      b. 3/4" insulating glass
      c. Air at 50 MPH: 0.07
      d. Water (No Penetration) P.S.F.: 7.52
      e. U-Value (with Low-E and Argon): 0.25-0.29
      f. SHGC (with Low-E and Argon): 0.14-0.33
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DESCRIPTION

A. Vinyl Windows: Factory fabricated frame and sash members of extruded, hollow, ultra-violet-resistant, polyvinyl chloride (PVC) with integral color; with factory-installed glazing, hardware, related flashings, anchorage and attachment devices.
   1. Configuration: As indicated on drawings.
      a. Product Type: H - Hung window, vertically sliding in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
   2. Color: as selected from manufacturer's standard colors
   3. Size to fit openings with minimum clearance around perimeter of assembly providing necessary space for perimeter seals.
   4. Framing Members: Fusion welded corners and joints, with internal reinforcement where required for structural rigidity; concealed fasteners.
   5. System Internal Drainage: Drain to exterior side by means of weep drainage network any water entering joints, condensation within glazing channel, or other migrating moisture within system.
   6. Glazing Stops, Trim, Flashings, and Accessory Pieces: Formed of rigid PVC, fitting tightly into frame assembly.
   7. Mounting Flange: Integral to frame assembly, providing weather stop at entire perimeter of frame.

2.03 PERFORMANCE REQUIREMENTS

A. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific window type:
   1. Performance Class (PC): R.
   2. Performance Grade (PG): 15, with minimum design pressure (DP) of 15.04 psf.

2.04 COMPONENTS

A. Glazing: Insulated double pane, annealed glass, clear, low-E coated, manufacturer's standard fill, with glass thicknesses as recommended by manufacturer for specified wind conditions.

B. Frame Depth: Manufacturer's standard.

C. Sealants for Setting Window Sill Pan Flashing: Provide butyl tape, non-hardening butyl, polyurethane, or silicone sealant; in compliance with ASTM E2112 installation practices.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install window unit assemblies in accordance with manufacturers instructions and applicable building codes.

B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities as necessary.

C. Align window plumb and level, free of warp or twist, and maintain dimensional tolerances and alignment with adjacent work.

D. Set sill members and sill flashing in continuous bead of sealant.

E. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

3.02 TOLERANCES

A. Maximum Variation from Level or Plumb: 0.06 inches every 3 ft non-cumulative or 0.5 inches per 100 ft, whichever is less.

3.03 FIELD QUALITY CONTROL

A. Provide services of vinyl window manufacturer's field representative to observe for proper installation of system and submit report.

B. See Section 01 4000 - Quality Requirements, for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.

3.04 ADJUSTING

A. Adjust hardware for smooth operation and secure weathertight closure.

3.05 CLEANING

A. Remove protective material from pre-finished surfaces.

B. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.

C. Remove excess glazing sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer and appropriate for application indicated.

END OF SECTION 08 5313

SECTION 08 7100
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for wood and hollow metal doors.

B. Electrically operated and controlled hardware.

C. Thresholds.

D. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

A. Section 08 1416 - Flush Wood Doors.

B. Section 10 1400 - Signage: Additional signage requirements.

C. Section 28 1000 - Access Control: Electronic access control devices.

1.03 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. BHMA A156.1 - American National Standard for Butts and Hinges; 2016.

C. BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches; 2017.

D. BHMA A156.3 - American National Standard for Exit Devices; 2014.

E. BHMA A156.4 - American National Standard for Door Controls - Closers; 2013.

F. BHMA A156.6 - American National Standard for Architectural Door Trim; 2015.

G. BHMA A156.7 - American National Standard for Template Hinge Dimensions; 2016.

H. BHMA A156.16 - American National Standard for Auxiliary Hardware; 2013.

I. BHMA A156.18 - American National Standard for Materials and Finishes; 2016.

J. BHMA A156.21 - American National Standard for Thresholds; 2014.

K. BHMA A156.22 - American National Standard for Door Gasketing and Edge Seal Systems, Builders Hardware Manufacturers Association; 2017.

L. BHMA A156.25 - American National Standard for Electrified Locking Devices; 2013.

M. BHMA A156.28 - American National Standard for Recommended Practices for Mechanical Keying Systems; 2013.

N. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2016.

O. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.

P. DHI (KSN) - Keying Systems and Nomenclature; 1989.

Q. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; 2004.

R. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

S. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

T. NFPA 101 - Life Safety Code; 2015.

U. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

B. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; attendance is required by affected installers and the following:
   1. Architect.
   2. Installer's Architectural Hardware Consultant (AHC).
   3. Hardware Installer.

4. Owner's Security Consultant.

C. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

D. Keying Requirements Meeting:
   1. Attendance Required:
      a. General Contractor.
      b. Owner.
      c. Hardware Installer.
      d. Owner's Security Consultant.
   2. Agenda:
      a. Establish keying requirements.
      b. Verify locksets and locking hardware are functionally correct for project requirements.
      c. Verify that keying and programming complies with project requirements.
   3. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
      a. Access control requirements.
      b. Flow of traffic and extent of security required.
   4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
   5. Deliver established keying requirements to manufacturers.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
   1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
   2. Provide complete description for each door listed.

C. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

D. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

E. Keying Schedule:
   1. Submit two copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

F. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

G. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Lock Cylinders: One for each master keyed group.
   3. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion.
   1. Closers: Five years, minimum.
   2. Exit Devices: Three years, minimum.
   3. Locksets and Cylinders: Three years, minimum.
   4. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
   1. Applicable provisions of federal, state, and local codes.
   2. Accessibility: ADA Standards and ICC A117.1.
   3. Applicable provisions of NFPA 101.
   4. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
   5. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
   6. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

D. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.
   1. Refer to Section 28 1000 for additional access control system requirements.

E. Fasteners:
   1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
      a. Aluminum fasteners are not permitted.
      b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
   2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
      a. Self-drilling (Tek) type screws are not permitted.
   3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
   4. Provide wall grip inserts for hollow wall construction.

2.02 HINGES

A. Manufacturers:
   1. Basis of Design: Hager Companies BB 1279.
   2. McKinney; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   3. Stanley, dormakaba Group; _____: www.stanleyhardwarefordoors.com/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Hinges: Comply with BHMA A156.1, Grade 1.
   1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
      a. Provide hinge width required to clear surrounding trim.
   2. Provide hinges on every swinging door.
   3. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
   4. Provide non-removable pins on exterior outswinging doors.
   5. Provide following quantity of butt hinges for each door:
      a. Doors up to 60 inches High: Two hinges.
      b. Doors From 60 inches High up to 90 inches High: Three hinges.

2.03 EXIT DEVICES

A. Manufacturers:
   1. Basis of Design: Sargent 8800 Series.
   2. DORMA USA, Inc; ____: www.dorma.com/#sle.
   3. Hager Companies; _____: www.hagerco.com/#sle.
   4. Stanley, dormakaba Group; _____: www.stanleyhardwarefordoors.com/#sle.
   5. Von Duprin, an Allegion brand; _____: www.allegion.com/us/#sle.
   6. Substitutions: See Section 01 6000 - Product Requirements.

B. Exit Devices: Comply with BHMA A156.3, Grade 1.
   1. Lever design to match lockset trim.

2. Provide cylinder with cylinder dogging or locking trim.
3. Provide exit devices properly sized for door width and height.
4. Provide strike as recommended by manufacturer for application indicated.
5. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.

2.04 CYLINDRICAL LOCKS

A. Manufacturers:
1. Sargent; an Assa Abloy Group company; 10 Line; L Rose, P Lever: www.assaabloydss.com.
2. DORMA USA, Inc; ____: www.dorma.com/#sle.
3. Hager Companies; _____: www.hagerco.com/#sle.
4. Schlage, an Allegion brand; _____: www.allegion.com/us/#sle.
5. Stanley, dormakaba Group; _____: www.stanleyhardwarefordoors.com/#sle.

B. Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 1.
1. Bored Hole: 2-1/8 inch diameter.
2. Latchbolt Throw: 1/2 inch, minimum.
3. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
a. Finish: To match lock or latch.
4. Provide a lock for each door, unless otherwise indicated that lock is not required.
5. Provide an office lockset for swinging door where hardware set is not indicated.
6. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.

2.05 ELECTROMECHANICAL LOCKS

A. Manufacturers:
1. Sargent; an Assa Abloy Group company; Keypad (KP) Series; Interior & Exterior: www.assaabloydss.com/#sle.
2. Substitutions: See Section 01 6000 - Product Requirements.

B. Electromechanical Locks: Comply with BHMA A156.25, Grade 1.
1. Provide motor-driven locks, with strike that is applicable to frame.
2. Type: Cylindrical (Bored).

2.06 DOOR PULLS AND PUSH PLATES

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
2. Hiawatha, Inc, division of Activar Construction Products Group, Inc; _____: www.activarcpg.com/hiawatha/#sle.

B. Door Pulls and Push Plates: Comply with BHMA A156.6.
1. Pull Type: Straight, unless otherwise indicated.
2. Push Plate Type: Flat, with square corners, unless otherwise indicated.
a. Edges: Beveled, unless otherwise indicated.
3. Material: Brass, unless otherwise indicated.
4. Provide door pulls and push plates on doors without a lockset, latchset, exit device, or auxiliary lock unless otherwise indicated.
5. On glazed storefront doors, provide matching door pulls/push plates on both faces unless otherwise indicated.

2.07 CLOSERS

A. Manufacturers; Surface Mounted:
1. Basis of Design: Sargent Power Glide 1431.
2. C. R. Laurence Company, Inc; _____: www.crl-arch.com/#sle.
3. DORMA USA, Inc; ____: www.dorma.com/#sle.
4. Hager Companies; _____: www.hagerco.com/#sle.
5. LCN, an Allegion brand; _____: www.allegion.com/us/#sle.
6. Stanley, dormakaba Group; _____: www.stanleyhardwarefordoors.com/#sle.
7. Substitutions: See Section 01 6000 - Product Requirements.

B. Closers: Comply with BHMA A156.4, Grade 1.

1. Type: Surface mounted to door.
2. Provide door closer on each exterior door.
3. At corridor entry doors, mount closer on room side of door.
4. At outswinging exterior doors, mount closer on interior side of door.
5. Include integral, adjustable Stop in all Closers.
6. Include Hold-Open function in all Closers.

2.08 KICK PLATES

A. Manufacturers:
1. Hiawatha, Inc, an Activar Construction Products Group company; _____: www.activarcpg.com/hiawatha/#sle.
2. Ives, an Allegion brand; _____: www.allegion.com/us/#sle.
3. Trimco; _____: www.trimcohardware.com/#sle.
4. Substitutions: See Section 01 6000 - Product Requirements.

B. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
1. Size: 8 inch high by 2 inch less door width (LDW) on push side of door.

2.09 FLOOR STOPS

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
2. Hager Companies; _____: www.hagerco.com/#sle.
3. Hiawatha, Inc, division of Activar Construction Products Group, Inc; _____: www.activarcpg.com/hiawatha/#sle.

B. Floor Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
1. Provide floor stops when wall surface is not available; be cautious not to create a tripping hazard.
2. Type: _____, with bumper floor stop.
3. Material: Aluminum housing with rubber insert.

2.10 WALL STOPS

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
2. Hiawatha, Inc, division of Activar Construction Products Group, Inc; _____: www.activarcpg.com/hiawatha/#sle.

B. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
1. Provide wall stops to prevent damage to wall surface upon opening door.
2. Provide a stop at every door not equipped with a closer.
3. Type: Bumper, concave, wall stop.
4. Material: Aluminum housing with rubber insert.

2.11 THRESHOLDS

A. Manufacturers:
1. Pemko; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
2. Hager Companies; _____: www.hagerco.com/#sle.
3. National Guard Products, Inc; _____: www.ngpinc.com/#sle.
4. Zero International, Inc; _____: www.zerointernational.com/#sle.

B. Thresholds: Comply with BHMA A156.21.
1. Provide threshold at each exterior door, unless otherwise indicated.
2. Type: Flat surface.
3. Material: Aluminum, with rubber weatherstripping.
4. Threshold Surface: Fluted horizontal grooves across full width.
5. Field cut threshold to profile of frame and width of door sill for tight fit.
6. Provide non-corroding fasteners at exterior locations.

2.12 WEATHERSTRIPPING AND GASKETING

A. Manufacturers:

1. Pemko; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
2. National Guard Products, Inc; _____: www.ngpinc.com/#sle.
3. Zero International, Inc; _____: www.zerointernational.com/#sle.

B. Weatherstripping and Gasketing: Comply with BHMA A156.22.
1. Head and Jamb Type: Adjustable.
2. Door Sweep Type: Encased in retainer.
3. Material: Aluminum, with brush weatherstripping.
4. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated; .
5. Provide door bottom sweep on each exterior door, unless otherwise indicated.

2.13 MAGNETIC CATCH

A. Manufacturers:
1. Ives, an Allegion brand; _____: www.allegion.com/us/#sle.
2. Rockwood; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.

B. Magnetic Catch: Provide on doors that are not frequently used and need to latch, and on doors that must stay in closed position within the frame.
1. Location: Mount magnetic catch at top of door jamb with strike plate fastened to door.
2. Material: Brass.

2.14 ROLLER LATCH

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
2. Substitutions: See Section 01 6000 - Product Requirements.

B. Roller Latch: Provide on doors that are not frequently used and need to latch, and on doors that must stay in closed position within the frame.

C. See door hardware schedule in the drawings for required locations.
1. Location: Mount roller latch at top of door with strike plate fastened to head of door frame.
2. Material: Brass.

2.15 SIGNAGE

A. See Section 10 1400 for additional signage requirements.

B. See door hardware schedule in the drawings for required locations.

C. Signage (Room Name Plates and Numbers): Provide on doors for individuals to easily identify room names and/or numbers.
1. Text Required: "Conference", "Men's", "Women's" or "Service".
2. Include Symbols for Restrooms, and Braille Text for all signs.

2.16 SILENCERS

A. Manufacturers:
1. Ives, an Allegion brand; _____: www.allegion.com/us/#sle.
2. Rockwood; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.

B. Provide at all new doors.

C. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
1. Single Door: Provide three on strike jamb of frame.
2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
3. Material: Rubber, black color.

2.17 VERTICAL ROD COVERS

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
2. Substitutions: See Section 01 6000 - Product Requirements.

B. Vertical Rod Covers: Provides protection from damage or tampering of surface mounted bottom vertical rod of exit device and to accommodate ADA Standards.
1. Length: 12 inch.

2. Material: Stainless steel.

2.18 KEY CONTROL SYSTEMS

A. Manufacturers:
   1. Sargent; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   2. Substitutions: See Section 01 6000 - Product Requirements.

B. Key Control Systems: Comply with guidelines of BHMA A156.28.
   1. Provide keying information in compliance with DHI (KSN) standards.
   2. Keying: Grand master keyed.
   3. Include construction keying and control keying with removable core cylinders.
   4. Key to existing keying system.
   5. Supply keys in following quantities:
      a. 1 each Grand Master keys.
      b. 6 each Construction Master keys.
      c. 15 each Construction keys.
      d. 2 each Construction Control keys.
      e. 2 each Control keys if new system.
   6. Deliver keys with identifying tags to Owner by security shipment direct from hardware supplier.

2.19 KEY CABINET

A. Key Cabinet: Sheet steel construction, piano hinged door with key lock; BHMA A156.28.
   1. Mounting: Wall-mounted.
   2. Capacity: Actual quantity of keys, plus 25 percent additional capacity.
   3. Size key hooks to hold 6 keys each.
   4. Finish: Baked enamel, manufacturer's standard color.
   5. Key cabinet lock to building keying system.
   6. Coordinate with owner's representative for mounting location.

2.20 FIRE DEPARTMENT LOCK BOX

A. Manufacturers:
   1. Knox Company; Knox-Box Rapid Entry System, _____: www.knoxbox.com/#sle.

B. Fire Department Lock Box:
   1. Heavy-duty, surface mounted, solid stainless-steel box with hinged door and interior gasket seal; single drill resistant lock with dust covers and tamper alarm.
   2. Capacity: Holds 10 keys.
   3. Finish: Manufacturer's standard dark bronze.

2.21 FINISHES

A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
   1. Primary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18.
   2. Secondary Finish: 625; bright chromium plated over nickel, with brass or bronze base material (former US equivalent US26); BHMA A156.18.
      a. Use secondary finish in kitchens, bathrooms, and other spaces containing chrome or stainless steel finished appliances, fittings, and equipment; provide primary finish on one side of door and secondary finish on other side if necessary.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Use templates provided by hardware item manufacturer.

C. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list, unless noted otherwise on drawings.
   1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.

2. Flush Wood Doors: Refer to Section 08 1416.
3. Mounting heights in compliance with ADA Standards:
    a. Locksets: 40-5/16 inch.
    b. Push Plates/Pull Bars: 42 inch.
    c. Deadlocks (Deadbolts): 48 inch.
    d. Exit Devices: 40-5/16 inch.

D. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 ADJUSTING

A. Adjust work under provisions of Section 01 7000 - Execution and Closeout Requirements.

B. Adjust hardware for smooth operation.

C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.04 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.05 PROTECTION

A. Protect finished Work under provisions of Section 01 7000 - Execution and Closeout Requirements.

B. Do not permit adjacent work to damage hardware or finish.

END OF SECTION 08 7100

SECTION 09 0561

COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient tile and sheet.
   2. Thin-set ceramic tile and stone tile.

B. Removal of existing floor coverings.

C. Preparation of new and existing concrete floor slabs for installation of floor coverings.

D. Testing of concrete floor slabs for moisture and alkalinity (pH).

E. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
   1. General Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under General Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

F. Patching compound.

G. Remedial floor coatings.

1.02 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete; 1999 (Reapproved 2014).

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2017.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2016a.

E. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2011.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.04 SUBMITTALS

A. Visual Observation Report: For existing floor coverings to be removed.

B. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and alkalinity (pH) limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.

C. Testing Agency's Report:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.
   3. Moisture and alkalinity (pH) test reports.
   4. Copies of specified test methods.
   5. Recommendations for remediation of unsatisfactory surfaces.
   6. Product data for recommended remedial coating.
   7. Submit report to Architect.
   8. Submit report not more than two business days after conclusion of testing.

D. Adhesive Bond and Compatibility Test Report.

E. Copy of RFCI (RWP).

1.05 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by General Contractor.

B. General Contractor's Responsibility Relating to Independent Agency Testing:
   1. Provide access for and cooperate with testing agency.
   2. Confirm date of start of testing at least 10 days prior to actual start.
   3. Allow at least 4 business days on site for testing agency activities.
   4. Achieve and maintain specified ambient conditions.
   5. Notify Architect when specified ambient conditions have been achieved and when testing will start.

1.06 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
   3. Products:
      a. TEC, an H.B. Fuller Construction Products Brand; TEC Feather Edge Skim Coat: www.tecspecialty.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

B. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
   1. Thickness: As required for application and in accordance with manufacturer's installation instructions.
   2. Use product recommended by testing agency.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Perform following operations in the order indicated:
   1. Preliminary cleaning.
   2. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
   3. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   4. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   5. Specified remediation, if required.
   6. Patching, smoothing, and leveling, as required.
   7. Other preparation specified.
   8. Adhesive bond and compatibility test.
   9. Protection.

B. Remediations:
   1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
   2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for

installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.

3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 REMOVAL OF EXISTING FLOOR COVERINGS

A. Comply with local, State, and federal regulations and recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings, as applicable to floor covering being removed.

B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.03 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.04 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.

F. Report: Report the information required by the test method.

3.05 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the General Contractor's convenience.

C. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.

D. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.06 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with requirements and recommendations of floor covering manufacturer.

C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

D. Do not fill expansion joints, isolation joints, or other moving joints.

3.07 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

3.08 APPLICATION OF REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating manufacturer.

END OF SECTION 09 0561

SECTION 09 2116

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal stud wall framing.

B. Cementitious backing board.

C. Gypsum wallboard.

D. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Building framing and sheathing.
   1. It shall be the contractor's option to use dimensional lumber or metal stud framing. Use one method throughout entire project.

B. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.

C. Section 07 2100 - Thermal Insulation: Acoustic insulation.

1.03 REFERENCE STANDARDS

A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2012.

B. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.

D. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2015.

E. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2014).

F. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014, with Editorial Revision (2015).

G. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2017.

H. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2018a.

I. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2015.

J. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2016.

K. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2014a.

L. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.

M. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.

N. GA-216 - Application and Finishing of Gypsum Panel Products; 2016.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

C. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum 3 years of experience.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.
   1. See PART 3 for finishing requirements.

2.02 METAL FRAMING MATERIALS

A. Manufacturers - Metal Framing, Connectors, and Accessories:
   1. ClarkDietrich; ____: www.clarkdietrich.com/#sle.
   2. Marino; ____: www.marinoware.com/#sle.
   3. Phillips Manufacturing Co; ____: www.phillipsmfg.com/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 7.5 psf.
   1. Studs: "C" shaped with flat or formed webs with knurled faces.
   2. Runners: U shaped, sized to match studs.
   3. Furring: Hat-shaped sections, minimum depth of 7/8 inch.

C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
   1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100-12.
   2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. CertainTeed Corporation; ____: www.certainteed.com/#sle.
   2. Georgia-Pacific Gypsum; ____: www.gpgypsum.com/#sle.
   3. Lafarge North America Inc: www.lafargenorthamerica.com.
   4. National Gypsum Company; ____: www.nationalgypsum.com/#sle.
   5. USG Corporation; ____: www.usg.com/#sle.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold resistant board is required at all locations.
   3. Thickness:
      a. Vertical Surfaces: 5/8 inch.
      b. Ceilings: 5/8 inch.

2.04 GYPSUM WALLBOARD ACCESSORIES

A. Acoustic Insulation: As specified in Section 07 2100.

B. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
   1. Types: As detailed or required for finished appearance.
   2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
   3. Products:
      a. Same manufacturer as framing materials.

C. Expansion Joints:
   1. Type: V-shaped metal with factory-installed protective tape.
   2. Products:

a. Phillips Manufacturing Co; 093 Expansion Control Joint: www.phillipsmfg.com/#sle.
b. Substitutions: See Section 01 6000 - Product Requirements.

D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
1. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.

E. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inch in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.

F. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion resistant.

G. Nails for Attachment to Wood Members: ASTM C514.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.

B. Studs: Space studs at 16 inches on center.
1. Extend partition framing to structure in all locations.
2. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

C. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

D. Standard Wall Furring: Install at concrete and masonry walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
1. Orientation: Vertical.

E. Blocking: Install wood blocking for support of:
1. Framed openings.
2. Wall mounted cabinets.
3. Plumbing fixtures.
4. Toilet partitions.
5. Toilet accessories.
6. Wall mounted door hardware.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

3.04 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Non-Rated: Install gypsum board parallel to framing, with ends and edges occurring over firm bearing.

C. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

D. Installation on Metal Framing: Use screws for attachment of gypsum board.

E. Installation on Wood Framing: For non-rated assemblies, install as follows:
1. Single-Layer Applications: Screw attachment.

F. Moisture Protection: Treat cut edges and holes in moisture resistant gypsum board with sealant.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as follows:

1. Not more than 30 feet apart on walls and ceilings over 50 feet long.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.06 JOINT TREATMENT

A. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.

B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   2. Level 3: Walls to receive textured wall finish.
   3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
   4. Level 1: Wall areas above finished ceilings, whether or not accessible in the completed construction.

C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.
   2. Taping, filling, and sanding is not required at surfaces behind fixed cabinetry.

D. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.07 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION 09 2116

SECTION 09 3000

TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for floor applications.

1.02 REFERENCE STANDARDS

A. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2014.

B. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).

C. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex-Portland Cement; 1999 (Reaffirmed 2010).

D. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2009 (Revised).

E. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).

F. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy; 1999 (Reaffirmed 2010).

G. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2010).

H. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 1999 (Reaffirmed 2010).

I. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 1999 (Reaffirmed 2010).

J. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).

K. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2010).

L. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2017.

M. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2012 (Revised).

N. ANSI A118.6 - American National Standard Specifications for Standard Cement Grouts for Tile Installation; 2010 (Reaffirmed 2016).

O. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2012.

P. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products; 2017.

Q. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2017.

R. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2016a.

S. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2017.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, ceramic accessories, and setting details.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Tile: 10 square feet of each size, color, and surface finish combination.

1.04 QUALITY ASSURANCE

A. Installer Qualifications:
   1. Company specializing in performing tile installation, with minimum of five years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Do not install solvent-based products in an unventilated environment.

PART 2 PRODUCTS

2.01 TILE

A. Manufacturers: All products by the same manufacturer.
   1. American Olean Corporation: www.americanolean.com/#sle.
   2. Dal-Tile Corporation: www.daltile.com/#sle.
   3. Substitutions: See Section 01 6000 - Product Requirements.

B. Porcelain Tile: ANSI A137.1, standard grade.
   1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
   2. Size: 12 by 12 inch, nominal.
   3. Thickness: 3/8 inch.
   4. Edges: Cushioned.
   5. Surface Finish: Unglazed.
   6. Color(s): To be selected by Architect from manufacturer's standard range.
   7. Trim Units: Matching bullnose and cove base shapes in sizes coordinated with field tile.

2.02 SETTING MATERIALS

A. Manufacturers:
   1. Bostik Inc; _____: www.bostik-us.com/#sle.
   2. Custom Building Products; _____: www.custombuildingproducts.com/#sle.
   3. LATICRETE International, Inc; _____: www.laticrete.com/#sle.
   4. TEC, an H.B. Fuller Construction Products Brand; ____: www.tecspecialty.com/#sle.

B. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
   1. Applications: Use this type of bond coat where indicated and where no other type of bond coat is indicated.

2.03 GROUTS

A. Manufacturers:
   1. Bostik Inc; ____: www.bostik-us.com/#sle.
   2. Custom Building Products; _____: www.custombuildingproducts.com/#sle.
   3. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com/#sle.
   4. TEC, an H.B. Fuller Construction Products Brand; ____: www.tecspecialty.com/#sle.

B. Standard Grout: ANSI A118.6 standard cement grout.
   1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
   2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
   3. Color(s): As selected by Architect from manufacturer's full line.

2.04 MAINTENANCE MATERIALS

A. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
   1. Composition: Water-based colorless silicone.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.

C. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within the following limits:
   1. Moisture Emission Rate: Not greater than 3 lb per 1000 sq ft per 24 hours, test in accordance with ASTM F1869.
   2. Alkalinity (pH): Verify pH range of 5 to 9, test in accordance with ASTM F710.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

3.03 INSTALLATION - GENERAL

A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.19 , manufacturer's instructions, and TCNA (HB) recommendations.

B. Request tile pattern. Do not interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

E. Form internal angles square and external angles bullnosed.

F. Sound tile after setting. Replace hollow sounding units.

G. Keep control and expansion joints free of mortar, grout, and adhesive.

H. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

I. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.

J. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
   1. Use uncoupling membrane under all tile unless other underlayment is indicated.

3.05 CLEANING

A. Clean tile and grout surfaces.

3.06 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION 09 3000

SECTION 09 6500
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient tile flooring.

B. Resilient base.

C. Installation accessories.

1.02 REFERENCE STANDARDS

A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2017.

B. ASTM F1861 - Standard Specification for Resilient Wall Base; 2016.

C. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2015.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.

C. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of sub-floor is acceptable.

D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Flooring Material: 15 square feet of each type and color.
   3. Extra Wall Base: 12 linear feet of each type and color.
   4. Extra Stair Materials: Quantity equivalent to 5 percent of each type and color.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.

B. Store all materials off of the floor in an acclimatized, weather-tight space.

C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

D. Do not double stack pallets.

1.05 FIELD CONDITIONS

A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 TILE FLOORING

A. LVT
   1. Tandus-Centiva; Event Series: Classic Plank, Crafted Plank, Heritage Plank
   2. Color: To be selected by Architect.
      a. Allow for up to (3) different colors/patterns from the selected series to be used within this project.
   3. 6" x 36" Plank size
   4. Install Unidirectionally, parallel or perpendicular with the building axis, within any one room.
   5. Tile direction may change 90 degrees from room to room. Confirm layout with Architect prior to beginning work.

2.02 RESILIENT BASE

A. Resilient Base: ASTM F1861, Type TV, vinyl, thermoplastic; top set Style B, Cove.

B. Type '4" VB ' on Architect's Finish Schedule

1. Manufacturers:
    a. Johnsonite, a Tarkett Company; _____: www.johnsonite.com/#sle.
    b. Roppe Corp; _____: www.roppe.com/#sle.
    c. Substitutions: See Section 01 6000 - Product Requirements.
2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
3. Height: 4 inch.
4. Thickness: 0.125 inch.
5. Finish: Satin.
6. Length: Roll.
7. Color: To be selected by Architect from manufacturer's full range of standard colors; allow for up to three colors to be used within this project..

C. Type ' 6" VB ' on Architect's Finish Schedule
1. Tarkett Millwork Wall Base: Reveal 6"
2. 1/4" thick by 6"
3. Color to be selected by Architect from manufacturers standard range.
    a. Allow for up to three colors to be used within this project.

2.03 CHAIR RAIL

A. Johnsonite Resilient Moldings
1. Rampart 4" Chair Rail
2. Color to be selected by Architect from manufacturers standard range.

2.04 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.

C. Adhesive for Vinyl Flooring:
1. Manufacturers:
    a. As recommended by vinyl flooring manufacturer for the product and application.

D. Moldings, Transition and Edge Strips: Metal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for resilient flooring installation by testing for moisture and pH.
1. Test in accordance with Section 09 0561.
2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
3. Provide written statement describing testing performed and confirmation of results within manufacturer's acceptable range.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare floor substrates for installation of flooring in accordance with Section 09 0561.

B. Clean substrate.

C. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Adhesive-Applied Installation:
   1. Spread only enough adhesive to permit installation of materials before initial set.
   2. Fit joints and butt seams tightly.
   3. Set flooring in place, press with heavy roller to attain full adhesion.

D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
   1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.

F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

3.04 INSTALLATION - TILE FLOORING

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

B. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.

C. Install plank tile with a random offset of at least 6 inches from adjacent rows.

3.05 INSTALLATION - RESILIENT BASE & CHAIR RAIL

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. 1/8" thick walls base: Miter internal corners. At external corners, 'V' cut back of base strip to 2/3 of its thickness and fold. At exposed ends, use premolded units.

C. Resilient Millwork wall base and chair rail: miter internal and external corners. use pre-molded terminations at exposed ends.

D. Install base on solid backing. Bond tightly to wall and floor surfaces.

E. Scribe and fit to door frames and other interruptions.

3.06 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION 09 6500

SECTION 09 7720

DECORATIVE FIBERGLASS REINFORCED WALL PANELS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Prefinished polyester glass reinforced plastic sheets and adhered to unfinished [gypsum] [cementitous] [untreated plywood] wallboard.
   1. [Aluminum] [PVC] trim.
   2. [PVC Wall base.]

B. Products Not Furnished or Installed under This Section:
   1. Gypsum [Cementitious] substrate board.
   2. Resilient Base.

1.02 REFERENCES

A. American Society for Testing and Materials: Standard Specifications (ASTM)
   1. ASTM D 256 -Izod Impact Strengths (ft #/in)
   2. ASTM D 570 -Water Absorption (%)
   3. ASTM D 638 -Tensile Strengths (psi) & Tensile Modulus (psi)
   4. ASTM D 790 -Flexural Strengths (psi) & Flexural Modulus (psi)
   5. ASTM D 2583- Barcol Hardness
   6. ASTM D 5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.
   7. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.03 SUBMITTALS

A. Product Data: Submit sufficient manufacturer's data to indicate compliance with these specifications, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

B. Shop Drawings: Submit elevations of each wall showing location of paneling and trim members with respect to all discontinuities in the wall elevation.

C. Selection Samples: Submit manufacturer’s standard color pattern selection samples representing manufacturer's full range of available colors and patterns.

D. Samples for Verification: Submit appropriate section of panel for each finish selected indicating the color, texture, and pattern required.
   1. Submit complete with specified applied finish.
   2. For selected patterns show complete pattern repeat.
   3. Exposed Molding and Trim: Provide samples of each type, finish, and color.

E. Manufacturers Material Safety Data Sheets (MSDS) for adhesives, sealants and other pertinent materials prior to their delivery to the site (available as downloads for most Marlite’s products at http://www.marlite.com/tech-details.aspx or by contacting Marlite at info@marlite.com).

1.04 QUALITY ASSURANCE

A. Conform to building code requirements for interior finish for smoke and flame spread requirements as tested in accordance with:
   1. ASTM E 84 (Method of test for surface burning characteristics of building Materials)
      a. Wall Required Rating – Class [A] [C].

B. Sanitary Standards: System components and finishes to comply with:
   1. United States Department of Agriculture (USDA) requirements for food preparation facilities, incidental contact.
   2. Food and Drug Administration (FDA) 1999 Food Code 6-101.11.
   3. Canadian Food Inspection Agency (CFIA) requirements.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials factory packaged on strong pallets.

B. Store panels and trim lying flat, under cover and protected from the elements. Allow panels to acclimate to room temperature (range of 60 to 75°F) for 48 hours prior to installation.

1.06 PROJECT CONDITIONS

A. Environmental Limitations: Building are to be fully enclosed prior to installation with sufficient heat (70°) and ventilation consistent with good working conditions for finish work

B. During installation and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.
   1. Provide ventilation to disperse fumes during application of adhesive as recommended by the adhesive manufacturer.

1.07 WARRANTY

A. Furnish one year guarantee against defects in material and workmanship.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

A. Marlite; 1 Marlite Drive, Dover, OH 44622. 800-377-1221 FAX (330) 343-4668 Email: info@marlite.com www.marlite.com.

B. Product:
   1. Standard FRP - Smooth

2.02 PANELS

A. Fiberglass reinforced thermosetting polyester resin panel sheets complying with ASTM D 5319.
   1. Coating: Multi-layer print, primer and finish coats or applied over-layer.
   2. Dimensions:
      a. Thickness – 0.090 “ nominal
      b. Width - 4'-0” nominal
      c. Length – As needed for each application, to minimize seaming
   3. Tolerance:
      a. Length and Width: +/-1/8 “
      b. Square - Not to exceed 1/8 “ for 8 footpanels or 5/32 “ for 10 foot panels

B. Properties: Resistant to rot, corrosion, staining, denting, peeling, and splintering.
   1. Flexural Strength - 1.0 x 104 psi per ASTM D 790. (7.0 kilogram-force/square millimeter)
   2. Flexural Modulus - 3.1 x 105 psi per ASTM D 790. (217.9 kilogram-force/square millimeter)
   3. Tensile Strength - 7.0 x 103 psi per ASTM D 638. (4.9 kilogram-force/square millimeter)
   4. Tensile Modulus - 1.6 x 105 psi per ASTM D 638. (112.5 kilogram-force/square millimeter)
   5. Water Absorption - 0.72% per ASTM D 570.
   6. Barcol Hardness (scratch resistance) of 35 55 as per ASTM D 2583.
   7. Izod Impact Strength of 72 ft. lbs./in ASTM D 256

C. Back Surface: Smooth. Imperfections which do not affect functional properties are not cause for rejection.

D. Front Finish:

E. Color: Up to four different colors; to be selected from manufacturer's standard selection.

2.03 BASE

A. Marlite Base Molding for 0.090” (2.29mm) thick FRP Panels
   1. Color: to be selected
   2. Profiles:
      a. M 612 FRP Base Molding, 10’ length
      b. M 651 Inside Corner
      c. M 660 Outside Corner
      d. M 620 LH End Cap
      e. M 625 RH End Cap

2.04 ACCESSORIES

A. Fasteners: Non-staining nylon drive rivets.
   1. Match panel colors.

2. Length to suit project conditions.

B. Adhesive: Either of the following construction adhesives complying with ASTM C 557.
   1. Marlite C-551 FRP Adhesive - Water- resistant, non-flammable adhesive; for use on unpainted surfaces.
   2. Marlite C-915 Construction Adhesive - Flexible, water-resistant, solvent based adhesive; to be used on painted gypsum board.

C. Sealant:
   1. Marlite Brand MS-250 Clear Silicone Sealant.

PART 3 EXECUTION

3.01 PREPARATION

A. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails countersunk, joints and cracks filled flush and smooth with the adjoining surface.
   1. Verify that stud spacing does not exceed 24” on-center.

B. Repair defects prior to installation.
   1. Level wall surfaces to panel manufacturer’s requirements. Remove protrusions and fill indentations.

3.02 INSTALLATION

A. Comply with manufacturer's recommended procedures and installation sequence.

B. Cut sheets to meet supports allowing 1/8” clearance for every 8 foot of panel.
   1. Cut and drill with carbide tipped saw blades or drill bits, or cut with shears.
   2. Pre-drill fastener holes 1/8” oversize with high speed drill bit.
      a. Space at 8” maximum on center at perimeter, approximately 1” from panel edge.
      b. Space at in field in rows 16’ on center, with fasteners spaced at 12” maximum on center.

C. Apply panels to board substrate, above base, vertically oriented with seams plumb and pattern aligned with adjoining panels.
   1. Install panels with manufacturer's recommended gap for panel field and corner joints.
      a. Adhesive trowel and application method to conform to adhesive manufacturer’s recommendations.
      b. Drive fasteners for snug fit. Do not over-tighten.

D. Apply panel moldings to all panel edges using silicone sealant providing for required clearances.
   1. All moldings must provide for a minimum 1/8“ of panel expansion at joints and edges, to insure proper installation.
   2. Apply sealant to all moldings, channels and joints between the system and different materials to assure watertight installation.

E. Installation at ceilings: use both mechnical fasteners & adhesive.

F. Installation at vertical surfaces: use mechanical fasteners.

3.03 CLEANING

A. Remove excess sealant from panels and moldings. Wipe panel down using a damp cloth and mild soap solution or cleaner.

B. Refer to manufacturer's specific cleaning recommendations Do not use abrasive cleaners.

END OF SECTION 09 7720

SECTION 09 9113
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Paint all new items or equipment protruding from or attached to exterior walls or roof (vents, standards, etc) a color complementing or matching the surrounding exterior material.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Floors, unless specifically indicated.
   6. Glass.
   7. Concealed pipes, ducts, and conduits.

1.02 REFERENCE STANDARDS

A. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.

B. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

C. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.

C. Samples: Submit two paper chip samples, 2 x 2 inch in size illustrating range of colors and textures available for each surface finishing product scheduled.

D. Manufacturer's Instructions: Indicate special surface preparation procedures.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
   3. Label each container with color in addition to the manufacturer's label.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three years experience and approved by manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Paints:
   1. Diamond Vogel Paints; _____: www.diamondvogel.com/#sle.
   2. Pratt & Lambert Paints: www.prattandlambert.com/#sle.
   3. Rodda Paint Company; _____: www.roddapaint.com/#sle.
   4. Sherwin-Williams Company; _____: www.sherwin-williams.com/#sle.
   5. Benjamin-Moore

C. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
   1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
   2. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   3. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   4. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
   5. Supply each paint material in quantity required to complete entire project's work from a single production run.
   6. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Colors: To be selected from manufacturer's full range of available colors.
   1. Selection to be made by Architect after award of contract.
   2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
   3. Extend colors to surface edges; colors may change at any edge as directed by Architect.

2.03 PAINT SYSTEMS - EXTERIOR

A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including primed metal.
   1. Two top coats and one coat primer.
   2. Top Coat(s): Exterior Alkyd Enamel; MPI #94 or 96.
   3. Top Coat Sheen:
      a. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
   4. Primer: As recommended by top coat manufacturer for specific substrate.

B. Paint CE-OP-3A - Concrete/Masonry, Opaque, Alkyd, 3 Coat:
   1. Block filler as needed to fill all voids and create a continuous surface.
   2. Semi-gloss: Two coats of alkyd enamel; ____.

C. Paint ME-OP-3A - Ferrous Metals, Unprimed, Alkyd, 3 Coat:
   1. One coat of alkyd primer.
   2. Semi-gloss: Two coats of alkyd enamel; ____.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
   1. Interior/Exterior Latex Block Filler; MPI #4.
      a. Products:
         1) Sherwin-Williams Loxon Block Surfacer. (MPI #4)

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: compatible filler.

C. Fastener Head Cover Material: compatible filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Fiber Cement Siding: 12 percent.
   2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.

H. Fiber Cement Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

I. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and _____. Protect from corrosion until coated.

J. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply additional coats until complete hide is achieved.

F. Sand metal surfaces lightly between coats to achieve required finish.

G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION 09 9113

SECTION 09 9123
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Floors, unless specifically indicated.
   6. Glass.
   7. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 05 5100 - Metal Stairs: Shop-primed items.

B. Section 09 9113 - Exterior Painting.

1.03 REFERENCE STANDARDS

A. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2016.

B. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.

C. Samples: Submit two paper chip samples, 2 by 2 inch in size illustrating range of colors and textures available for each surface finishing product scheduled.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
   3. Label each container with color in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three years experience and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply materials when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F above the dew point; or to damp or wet surfaces.

D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Paints:
1. Diamond Vogel Paints: www.diamondvogel.com/#sle.
2. Rodda Paint Co: www.roddapaint.com/#sle.
3. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
4. Benjamin-Moore

C. Primer Sealers: Same manufacturer as top coats.

D. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
2. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
3. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
4. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
5. Supply each paint material in quantity required to complete entire project's work from a single production run.
6. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

C. Colors: To be selected from manufacturer's full range of available colors.
1. Selection to be made by Architect after award of contract.
2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
3. Extend colors to surface edges; colors may change at any edge as directed by Architect.
4. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.

2.03 PAINT SYSTEMS - INTERIOR

A. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals and wood:
   1. Medium duty applications include doors, door frames, handrails, and guardrails.
   2. Two top coats and one coat primer.
   3. Top Coat(s): Interior Alkyd, Water Based; MPI #167, 168, or 169.
      a. Products:
         1) Sherwin-Williams ProMar 200 Waterbased Acrylic-Alkyd, Semi-Gloss.
   4. Top Coat Sheen:
      a. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.

B. Paint I-OP-MD-WC - Medium Duty Vertical and Overhead: Including gypsum board.
   1. Two top coats and one coat primer.
   2. Top Coat(s): Interior Alkyd, Water Based; MPI #167, 168, or 169.
      a. Products:
         1) Sherwin-Williams ProMar 200 Waterbased Acrylic-Alkyd, Eg-Shel.
         2) Substitutions: Section 01 6000 - Product Requirements.
   3. Top Coat Sheen:
      a. Eggshell: MPI gloss level 3; use this sheen at gypsum board walls & ceilings.
   4. Primer: As recommended by top coat manufacturer for specific substrate.

C. Paint CI-OP-3A - Concrete/Masonry, Opaque, Alkyd, 3 Coat:
   1. One coat of alkyd primer sealer.
   2. Semi-gloss: Two coats of alkyd enamel; ____.

2.04 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.

H. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

I. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

J. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

E. Sand wood and metal surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION 09 9123

SECTION 09 9600

HIGH-PERFORMANCE COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. High performance coatings.

B. Surface preparation.

1.02 REFERENCE STANDARDS

A. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2017).

B. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

D. SSPC-SP 13 - Surface Preparation of Concrete; 1997 (Reaffirmed 2003).

PART 2 PRODUCTS

2.01 TOP COAT MATERIALS

A. Coatings - General: Provide complete multi-coat systems formulated and recommended by manufacturer for the applications indicated, in the thicknesses indicated; number of coats specified does not include primer or filler coat.

B. Epoxy Coating for interior side, bottom 60" of new cmu walls in Dog Kennel Addition: Dog Boarding 202:
   1. Number of coats: two top coats.
   2. Primer / Block Filler:
      a. Coats: as required to fill all voids and provide a continuous surface
      b. Products:
         1) Sherwin Williams Loxon Surfacer LX01W200.
   3. Top Coat(s): Light Industrial Coating, Interior, Water Based Epoxy; MPI #151.
      a. Sheen: Semi-Gloss.
      b. Products:
         1) Sherwin-Williams; Pro Industrial Catalyzed Waterbased Epoxy B73-300 Series; MPI #151, 153: www.protective.sherwin-williams.com/#sle.
         2) Substitutions: Section 01 6000 - Product Requirements.

C. Epoxy Floor Coating for New Concrete Floors in Dog Kennel Addition and Pet Cage Rooms in existing building; Rooms 116B-116K, :
   1. Rooms:
      a. Adoptable Dog Cages: 116B
      b. Animal Cage Rooms: 116C-116K
      c. Pet Isolation: 117B
      d. Throughout addition: 201, 202 & 203
   2. Number of Coats: Two.
   3. Top Coat(s): Polyamide Epoxy Deck Coating, Slip Resistant, Two-Component; MPI #82.
      a. Sheen: Gloss.
      b. Products:
         1) Sherwin-Williams; ArmorSeal 8100 HS; MPI #82: www.protective.sherwin-williams.com/#sle.

D. Shellac: Pure, white type.

2.02 ACCESSORY MATERIALS

A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of coated surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Do not begin application of coatings until substrates have been properly prepared.

C. Verify that substrate surfaces are ready to receive work as instructed by the coating manufacturer. Obtain and follow manufacturer's instructions for examination and testing of substrates.

D. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Cementitious Substrates: Do not begin application until substrate has cured 28 days minimum and measured moisture content is not greater than 12 percent.
   2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.

G. Masonry: Verify masonry joints are struck flush.

H. Proceed with coating application only after unacceptable conditions have been corrected.
   1. Commencing coating application constitutes General Contractor's acceptance of substrates and conditions.

3.02 PREPARATION

A. Clean surfaces of loose foreign matter.

B. Remove substances that would bleed through finished coatings. If unremovable, seal surface with shellac.

C. Remove finish hardware, fixture covers, and accessories and store.

D. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
   2. Prepare surface as recommended by coating manufacturer and according to SSPC-SP 13.

E. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by coating manufacturer.

F. Protect adjacent surfaces and materials not receiving coating from spatter and overspray; mask if necessary to provide adequate protection. Repair damage.

3.03 PRIMING

A. Apply primer to all surfaces, unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.

B. Concrete Masonry: Apply masonry filler to thickness required to fill holes and produce smooth surface; minimum thickness of 30 mils.

3.04 COATING APPLICATION

A. Apply coatings in accordance with manufacturer's written instructions, to thicknesses specified.

B. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. Clean surfaces immediately of overspray, splatter, and excess material.

C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

3.06 PROTECTION

A. Protect finished work from damage.

END OF SECTION 09 9600

SECTION 10 1400
SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Room and door signs.

B. Interior directional and informational signs.

C. Emergency evacuation maps.

1.02 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.

C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
   1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
   2. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
   3. Submit for approval by Owner through Architect prior to fabrication.

D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.

E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

F. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Flat Signs:
   1. Mohawk Sign Systems, Inc; M2000 Room Name & Number signs; Arched top; 8" x 8": www.mohawksign.com/#sle.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SIGNAGE APPLICATIONS

A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 _____, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.

B. Room and Door Signs: Provide a sign for every doorway as shown in the Door schedule.
   1. Sign Type: Flat signs with _____ panel media as specified.
   2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
   3. Character Height: 1-1/2 inch.
   4. Office Doors: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section for replaceable occupant name.
   5. Conference and Meeting Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings; in addition, provide "window" section with sliding "In Use/Vacant" indicator.

6. Service Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings.
7. Rest Rooms: Identify with pictograms, the names "MEN" and "WOMEN", room numbers to be determined later, and braille.
8. Allow for up to fifty-five Room and Door Signs.

C. Interior Directional and Informational Signs:
1. Sign Type: Same as room and door signs.
2. Allow for twenty interior signs:
a. Ten (10) wall mounted signs
b. Ten (10) ceiling mounted signs. Ceiling mounted signs to be two-sided.
3. Locations and wording of signs to be determined.

D. Emergency Evacuation Maps:
1. Provide ten Evacuation Maps; Locations to be determined.
2. Mininum size 8" x 14".
3. Map content to be provided by Owner.
4. Use clear plastic panel silk-screened on reverse, in brushed aluminum frame, screw-mounted.

E. Visual Barrier Sign Kit:
1. Plastic Chain across entry to stair ways with a suspended sign reading 'CLOSED'
2. Product: Closed Sign Kit
a. Mr. Chain; www.mrchain.com;
3. Yellow Chain, Yellow diamond sign, with universal 'Closed' symbol and all necessary mounting accessories.

2.03 SIGN TYPES

A. Flat Signs: Signage media without frame.
1. Edges: Square.
2. Corners: Square.
3. Wall Mounting of One-Sided Signs: Concealed screws.
4. Wall and Ceiling Mounting of Two-Sided Signs: Aluminum wall bracket, powder coated, color selected from manufacturer's standard colors, attached with screws in predrilled mounting holes, set in clear silicone sealant.

B. Color and Font: Unless otherwise indicated:
1. Character Font: Helvetica, Arial, or other sans serif font.
2. Character Case: Upper case only.
3. Background Color: Clear.
4. Character Color: Contrasting color.

2.04 TACTILE SIGNAGE MEDIA

A. Engraved Panels: Laminated colored plastic; engraved through face to expose core as background color:
1. Total Thickness: 1/16 inch.

2.05 NON-TACTILE SIGNAGE MEDIA

A. Silk Screened Plastic Panels: Letters and graphics silk screened onto reverse side of plastic surface:
1. Sign Color: Clear.
2. Total Thickness: 1/8 inch.

2.06 ACCESSORIES

A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Locate signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.

D. Protect from damage until Substantial Completion; repair or replace damaged items.

END OF SECTION 10 1400

SECTION 10 2600
WALL AND DOOR PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Corner guards.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate physical dimensions and anchorage details.

C. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project:
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Stock Materials: ____ minimum 192 inches long unit of covers for corner guards.

E. Maintenance Data: For each type of product . Include information regarding recommended and potentially detrimental cleaning materials and methods.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver wall and door protection items in original, undamaged protective packaging. Label items to designate installation locations.

B. Protect work from moisture damage.

C. Protect work from UV light damage.

D. Do not deliver products to project site until areas for storage and installation are fully enclosed, and interior temperature and humidity are in compliance with manufacturer's recommendations for each type of item.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a one year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Corner Guards:
   1. Inpro; _____: www.inprocorp.com/#sle.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PRODUCT TYPES

A. Corner Guards - Surface Mounted:
   1. Material: High impact vinyl with full height extruded aluminum retainer.
   2. Width of Wings: 2 inches.
   3. Corner: Radiused.
   4. Color: As selected from manufacturer's standard colors.
   5. Length: One piece.
   6. Preformed end caps.

2.03 FABRICATION

A. Fabricate components with tight joints, corners and seams.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to supporting construction.

B. Position corner guard 4 inches above finished floor to ____ inches high.

3.02 TOLERANCES

3.03 CLEANING

A. Clean wall and door protection items of excess adhesive, dust, dirt, and other contaminants.

3.04 SCHEDULE

A. See Finish Schedule in Drawings for number & location of Corner Guards.

END OF SECTION 10 2600

SECTION 10 2800

TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Utility room accessories.

1.02 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Bobrick Washroom Specialties.

B. Provide products of each category type by single manufacturer.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

B. Chrome/Nickel Plating: ASTM B456, SC 2, polished finish, unless otherwise noted.

2.04 UTILITY ROOM ACCESSORIES

A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
   1. Hooks: Two, 0.06 inch stainless steel rag hooks at shelf front.
   2. Length: 34 inches.
   3. Product: B-239 x 34 manufactured by Bobrick.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

3.02 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights and Locations: As required by accessibility regulations

3.03 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION 10 2800

SECTION 12 3600
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for manufactured casework.

B. Wall-hung counters and vanity tops.

1.02 RELATED REQUIREMENTS

A. Section 06 4100 - Architectural Wood Casework.

1.03 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2017.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2016).

C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2016, with Errata (2017).

D. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.

E. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

F. PS 1 - Structural Plywood; 2009.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Complete details of materials and installation; combine with shop drawings of cabinets and casework specified in other sections.

C. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.

D. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Same fabricator as for cabinets on which tops are to be installed.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.
   1. Flat Sheet Thickness: 1/2 inch, minimum.
   2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
      a. Manufacturers:
         1) Avonite Surfaces; _____: www.avonitesurfaces.com/#sle.
         2) Dupont; _____: www.corian.com/#sle.
         3) Formica Corporation; _____: www.formica.com/#sle.
         4) Wilsonart; _____: www.wilsonart.com/#sle.

b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
c. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
d. Color and Pattern: As selected by Architect from manufacturer's full line.

3. Other Components Thickness: 1/2 inch, minimum.
4. Exposed Edge Treatment: Built up to minimum 1-1/4 inch thick; radiused edge.
5. Back and End Splashes: Same sheet material, radiused top; minimum 4 inches high.
6. Fabricate in accordance with 1, Section 11 - Countertops, Custom Grade.

2.02 MATERIALS

A. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.

B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

C. Joint Sealant: Mildew-resistant silicone sealant, coordinating color.

2.03 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
1. Join lengths of tops using best method recommended by manufacturer.
2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
2. Height: 4 inches, unless otherwise indicated.

C. Solid Surfacing: Fabricate tops and wall panels up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

D. Wall-Mounted Counters: Provide brackets as indicated on drawings.

E. Fabricate sills and partial wall height caps in the largest sections practicable, with top surface of joints flush.
1. Interior window sills & caps: field measure for size at each location. Provide sills and caps that extend 3/4" beyond the adjacent finished wall or casing trim at all exposed edges.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Seal joint between back/end splashes and vertical surfaces.

3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.

B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.

C. Field Joints: 1/8 inch wide, maximum.

3.05 CLEANING

A. Clean countertops surfaces thoroughly.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION 12 3600

SECTION 22 0720
PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Piping insulation.

B. Jackets and accessories.

1.02 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2011be1.

B. ASTM D1056 - Standard Specification for Flexible Cellular Materials--Sponge or Expanded Rubber; 2007.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.

D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2010.

E. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association; 2006.

F. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

PART 2 PRODUCTS SEE ENGINEER'S PLANS FOR PRODUCT SELECTIONS/REQUIREMENTS

2.01 SEE MECHANICAL ENGINEER'S PLANS AND NOTES FOR PRODUCT SELECTIONS.

2.02 REQUIREMENTS FOR ALL PRODUCTS OF THIS SECTION

A. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, NFPA 255, or UL 723.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that piping has been tested before applying insulation materials.

B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with NAIMA National Insulation Standards.

C. Exposed Piping: Locate insulation and cover seams in least visible locations.

D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.

E. Glass fiber insulated pipes conveying fluids below ambient temperature:
   1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
   2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.

F. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.

G. For hot piping conveying fluids over 140 degrees F, insulate flanges and unions at equipment.

H. Glass fiber insulated pipes conveying fluids above ambient temperature:
   1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
   2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.

I. Inserts and Shields:
   1. Application: Piping 1-1/2 inches diameter or larger.
   2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.

3. Insert location: Between support shield and piping and under the finish jacket.
4. Insert configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
5. Insert material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.

J. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, refer to Section 07840.

K. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

END OF SECTION 22 0720

SECTION 22 1007
PLUMBING PIPING SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof and floor drains.

B. Cleanouts.

C. Backflow preventers.

1.02 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities; Final Rule; current edition; (ADA Standards for Accessible Design).

B. ASME A112.6.3 - Floor and Trench Drains; The American Society of Mechanical Engineers; 2001 (R2007).

C. ASSE 1013 - Reduced Pressure Principle Backflow Preventers and Reduced Pressure Fire Protection Principle Backflow Preventers; American Society of Sanitary Engineering; 2011.

D. ASSE 1019 - Vacuum Breaker Wall Hydrants, Freeze Resistant Automatic Draining Type; American Society of Sanitary Engineering; 2011 (ANSI/ASSE 1019).

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.

C. Shop Drawings: Indicate dimensions, weights, and placement of openings and holes.

D. Manufacturer's Instructions: Indicate Manufacturer's Installation Instructions: Indicate assembly and support requirements.

E. Project Record Documents: Record actual locations of equipment, cleanouts, backflow preventers, water hammer arrestors _____.

F. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01600 - Product Requirements, for additional provisions.
   2. Extra Loose Keys for Outside Hose Bibbs: One.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Accept specialties on site in original factory packaging. Inspect for damage.

PART 2 PRODUCTS

2.01 SEE MECHANICAL ENGINEER'S PLANS AND NOTES FOR PRODUCT SELECTIONS.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.

C. Encase exterior cleanouts in concrete flush with grade.

D. Install floor cleanouts at elevation to accommodate finished floor.

E. Install approved portable water protection devices on plumbing lines where contamination of domestic water may occur; on boiler feed water lines, janitor rooms, fire sprinkler systems, premise isolation, irrigation systems, flush valves, interior and exterior hose bibbs.

F. Pipe relief from backflow preventer to nearest drain.

G. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to lavatories sinks washing machine outlets _____.

H. Install air chambers on hot and cold water supply piping to each fixture or group of fixtures (each washroom). Fabricate same size as supply pipe or 3/4 inch minimum, and minimum 18 inches long.

END OF SECTION 22 1007

SECTION 22 1010
PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe, pipe fittings, valves, and connections for piping systems.
   1. Sanitary sewer.
   2. Domestic water.
   3. Storm water.
   4. Gas.

1.02 REFERENCE STANDARDS

A. ANSI Z21.22 - American National Standard for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems; 1999, and addenda A&B (R2004).

B. ASME B16.3 - Malleable Iron Threaded Fittings; The American Society of Mechanical Engineers; 2011.

C. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; The American Society of Mechanical Engineers; 2012 (ANSI B16.18).

D. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings; The American Society of Mechanical Engineers; 2001 (R2010).

E. ASME B31.1 - Power Piping; The American Society of Mechanical Engineers; 2012 (ANSI/ASME B31.1).

F. ASME B31.9 - Building Services Piping; The American Society of Mechanical Engineers; 2011 (ANSI/ASME B31.9).

G. ASME (BPV IV) - Boiler and Pressure Vessel Code, Section IV - Rules for Construction of Heating Boilers; The American Society of Mechanical Engineers; 2010.

H. ASME (BPV IX) - Boiler and Pressure Vessel Code, Section IX - Welding and Brazing Qualifications; The American Society of Mechanical Engineers; 2010.

I. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.

J. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2012.

K. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2011a.

L. ASTM B32 - Standard Specification for Solder Metal; 2008.

M. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2009.

N. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2005 (Reapproved 2011).

O. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2004 (Reapproved 2009).

P. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2012.

Q. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2011.

R. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings; 1996 (Reapproved 2010).

S. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2008.

T. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; American Water Works Association; 2010 (ANSI/AWWA C105/A21.5).

U. AWWA C651 - Disinfecting Water Mains; American Water Works Association; 2005 (ANSI/AWWA C651).

V. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.; 2009.

W. MSS SP-67 - Butterfly Valves; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.; 2011.

X. MSS SP-71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.; 2011.

Y. MSS SP-78 - Cast Iron Plug Valves, Flanged and Threaded Ends; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.; 2011.

Z. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.; 2008.

AA. MSS SP-85 - Cast Iron Globe & Angle Valves, Flanged and Threaded Ends; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.; 2011.

AB. NFPA 54 - National Fuel Gas Code; National Fire Protection Association; 2012.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

C. Project Record Documents: Record actual locations of valves.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01600 - Product Requirements, for additional provisions.
   2. Valve Repacking Kits: One for each type and size of valve.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with applicable codes.

B. Valves: Manufacturer's name and pressure rating marked on valve body.

C. Welding Materials and Procedures: Conform to ASME (BPV IX) and applicable state labor regulations.

D. Welder Qualifications: Certified in accordance with ASME (BPV IX).

E. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.06 FIELD CONDITIONS

A. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 SEE MECHANICAL ENIGNEER'S PLANS & DETAILS FOR PRODUCT SELECTIONS AND REQUIREMENTS.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

D. Install piping to maintain headroom, conserve space, and not interfere with use of space.

E. Group piping whenever practical at common elevations.

F. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors with Section 08 3100.

G. Install bell and spigot pipe with bell end upstream.

H. Install valves with stems upright or horizontal, not inverted.

I. Install water piping to ASME B31.9.

3.04 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Prior to starting work, verify system is complete, flushed and clean.

B. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.

C. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.

D. Maintain disinfectant in system for 24 hours.

E. If final disinfectant residual tests less than 25 mg/L, repeat treatment.

F. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

G. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

END OF SECTION 22 1010

SECTION 22 3100
PLUMBING EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water heaters.

B. Water storage tanks.

C. Water softeners.

1.02 REFERENCE STANDARDS

A. UL 778 - Standard for Motor-Operated Water Pumps; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittals procedures.

B. Product Data:
   1. Provide dimension drawings of water heaters indicating components and connections to other equipment and piping.
   2. Indicate pump type, capacity, power requirements.
   3. Provide electrical characteristics and connection requirements.

C. Project Record Documents: Record actual locations of components.

D. Operation and Maintenance Data: Include operation, maintenance, and inspection data, replacement part numbers and availability, and service depot location and telephone number.

E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01600 - Product Requirements, for additional provisions.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

B. Identification: Provide pumps with manufacturer's name, model number, and rating/capacity identified by permanently attached label.

C. Performance: Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, operate within 25 percent of midpoint of published maximum efficiency curve.

1.05 CERTIFICATIONS

A. Water Heaters: NSF approved.

B. Water Tanks: ASME labeled, to ASME (BPV VIII, 1).

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

1.07 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.

B. Provide five year manufacturer warranty for domestic water heaters.

PART 2 PRODUCTS

2.01 SEE MECHANICAL ENGINEER'S PLANS AND NOTES FOR PRODUCT SELECTIONS.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install plumbing equipment in accordance with manufacturer's instructions, as required by code, and complying with conditions of certification, if any.

B. Coordinate with plumbing piping and related fuel piping work to achieve operating system.

C. Domestic Water Storage Tanks:
   1. Provide steel pipe support, independent of building structural framing members.
   2. Clean and flush prior to delivery to site. Seal until pipe connections are made.

D. Pumps:
   1. Provide air cock and drain connection on horizontal pump casings.
   2. Provide line sized isolating valve and strainer on suction and line sized soft seated check valve and balancing valve on discharge.
   3. Decrease from line size with long radius reducing elbows or reducers. Support piping adjacent to pump such that no weight is carried on pump casings. Provide supports under elbows on pump suction and discharge line sizes 4 inches and over.
   4. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25 percent of midpoint of published maximum efficiency curve.
   5. Align and verify alignment of base mounted pumps prior to start-up.
   6. Provide electrical interlocking from cooling condensate pump safety switch to associated HVAC unit(s) furnished under other Sections.

END OF SECTION 22 3100

SECTION 22 4000
PLUMBING FIXTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Service sinks.

1.02 REFERENCE STANDARDS

A. NSF 61 - Drinking Water System Components - Health Effects; 2017.

B. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

C. Manufacturer's Instructions: Indicate installation methods and procedures.

D. Maintenance Data: Include fixture trim exploded view and replacement parts lists.

E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Faucet Washers: One set of each type and size.
   3. Extra Lavatory Supply Fittings: One set of each type and size.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Accept fixtures on site in factory packaging. Inspect for damage.

B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 SEE MECHANICAL ENGINEER'S PLANS AND NOTES FOR PRODUCT SELECTIONS.

2.02 GENERAL REQUIREMENTS

A. See Mechanical Engineer's plans and notes for product selections.

B. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.03 REGULATORY REQUIREMENTS

A. Comply with applicable codes for installation of plumbing systems.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.

B. Verify that electric power is available and of the correct characteristics.

C. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

3.02 PREPARATION

A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.03 INSTALLATION

A. Install each fixture with trap, easily removable for servicing and cleaning.

B. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.

C. Install components level and plumb.

D. Install and secure fixtures in place with wall supports and bolts.

E. Seal fixtures to wall and floor surfaces with sealant as specified in Section 07 9005, color to match fixture.

F. Solidly attach water closets to floor with lag screws. Lead flashing is not intended hold fixture in place.

3.04 INTERFACE WITH WORK OF OTHER SECTIONS

A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

3.05 ADJUSTING

A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.06 CLEANING

A. Clean plumbing fixtures and equipment.

3.07 PROTECTION

A. Protect installed products from damage due to subsequent construction operations.

B. Repair or replace damaged products before Date of Substantial Completion.

END OF SECTION 22 4000

SECTION 23 0910

INSTRUMENTS AND CONTROL ELEMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Thermostats.

1.02 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide description and engineering data for each control system component. Include sizing as requested. Provide data for each system component and software module.

C. Shop Drawings: Indicate complete operating data, system drawings, wiring diagrams, and written detailed operational description of sequences. Submit schedule of valves indicating size, flow, and pressure drop for each valve. For automatic dampers indicate arrangement, velocities, and static pressure drops for each system.

D. Project Record Documents: Record actual locations of control components, including panels, thermostats, and sensors. Accurately record actual location of control components, including panels, thermostats, and sensors.

E. Warranty: Submit manufacturers warranty and ensure forms have been filled out in Owner s name and registered with manufacturer.

PART 2 PRODUCTS

2.01 SEE MECHANICAL ENGINEER'S PLANS AND NOTES FOR PRODUCT SELECTIONS.

2.02 EQUIPMENT - GENERAL

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that systems are ready to receive work.

C. Beginning of installation means installer accepts existing conditions.

D. Sequence work to ensure installation of components is complementary to installation of similar components in other systems.

E. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Check and verify location of thermostats, humidistats, and exposed control sensors with plans and room details before installation. Locate 60 inches above floor. Align with lighting switches. Refer to Section 16140.

C. Provide conduit and electrical wiring in accordance with Section 16155. Electrical material and installation shall be in accordance with appropriate requirements of Division 16.

3.03 MAINTENANCE

A. Provide service and maintenance of control system for one year from Date of Substantial Completion.

B. Provide complete service of controls systems, including call backs, and submit written report of each service call.

C. In addition to normal service calls, make minimum of 2 complete normal inspections of approximately 2 hours duration to inspect, calibrate, and adjust controls.

END OF SECTION 23 0910

SECTION 23 3150
DUCTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal ductwork.

B. Nonmetal ductwork.

C. Duct cleaning.

1.02 REFERENCE STANDARDS

A. ASHRAE (FUND) - ASHRAE Handbook - Fundamentals; 2009.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2008.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.

D. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength, Low Alloy, and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2012.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.

F. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; National Fire Protection Association; 2012; or later if adopted by local Authority Having JUrisdiction.

G. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations; National Fire Protection Association; 2011; or later if adopted by local Authority Having JUrisdiction.

H. SMACNA (DCS) - HVAC Duct Construction Standards; 2005; or later if adopted by local Authority Having JUrisdiction.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate duct fittings, particulars such as gages, sizes, welds, and configuration prior to start of work for HVAC systems.

C. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

D. HVAC equipment/system shall be tested and balanced to with 10% of design air volumes; with a report from a certified testing engineer attesting thereto.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.05 REGULATORY REQUIREMENTS

A. Construct ductwork to NFPA 90A standards.

1.06 FIELD CONDITIONS

A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.

B. Maintain temperatures within acceptable range during and after installation of duct sealants.

PART 2 PRODUCTS

2.01 SEE MECHANICAL ENGINEER'S PLANS & DETAILS FOR PRODUCT SELECTIONS/REQUIREMENTS

PART 3 EXECUTION

3.01 INSTALLATION

A. Install, support, and seal ducts in accordance with SMACNA HVAC Duct Construction Standards.

B. Install in accordance with manufacturer's instructions.

C. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

D. Flexible Ducts: Connect to metal ducts with adhesive.

E. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.

F. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of systems, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.

G. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

H. Use double nuts and lock washers on threaded rod supports.

I. Connect terminal units to supply ducts directly or with one foot maximum length of flexible duct. Do not use flexible duct to change direction.

J. Connect diffusers or light troffer boots to low pressure ducts directly or with 5 feet maximum length of flexible duct held in place with strap or clamp.

K. At exterior wall louvers, seal duct to louver frame and install blank-out panels.

L. HVAC equipment/system shall be tested and balanced to with 10% of design air volumes; with a report from a certified testing engineer attesting thereto.

3.02 CLEANING

A. Clean duct system and force air at high velocity through duct to remove accumulated dust. To obtain sufficient air, clean half the system at a time. Protect equipment that could be harmed by excessive dirt with temporary filters, or bypass during cleaning.

END OF SECTION 23 3150

SECTION 23 3160
DUCT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Duct insulation.

B. Duct Liner.

1.02 REFERENCE STANDARDS

A. ASTM C916 - Standard Specification for Adhesives for Duct Thermal Insulation; 1985 (Reapproved 2007).

B. ASTM C1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings; 2008.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.

D. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2009.

E. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association; 2006.

F. SMACNA (DCS) - HVAC Duct Construction Standards; Sheet Metal and Air Conditioning Contractors' National Association; 2005.

G. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

C. Manufacturer's Instructions: Indicate installation procedures necessary to ensure acceptable workmanship and that installation standards will be achieved.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.

B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.05 FIELD CONDITIONS

A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 PRODUCTS

2.01 REQUIREMENTS FOR ALL PRODUCTS OF THIS SECTION

A. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, NFPA 255, or UL 723.

2.02 GLASS FIBER, FLEXIBLE

A. Manufacturer:
   1. Knauf Insulation;www.knaufusa.com.
   2. Johns Manville Corporation; www.jm.com.
   3. Owens Corning Corp; www.owenscorning.com.
   4. CertainTeed Corporation; www.certainteed.com.
   5. Substitutions: See Section 01600 - Product Requirements.

B. Insulation: ASTM C553; flexible, noncombustible blanket.
   1. 'K' value: 0.36 at 75 degrees F, when tested in accordance with ASTM C518.
   2. Maximum Service Temperature: 1200 degrees F.

3. Maximum Water Vapor Sorption: 5.0 percent by weight.

C. Vapor Barrier Jacket:
1. Kraft paper with glass fiber yarn and bonded to aluminized film.
2. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
3. Secure with pressure sensitive tape.

D. Vapor Barrier Tape:
1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

E. Outdoor Vapor Barrier Mastic:
1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

F. Tie Wire: Annealed steel, 16 gage.

2.03 DUCT LINER

A. Manufacturers:
1. Knauf Insulation: www.knaufusa.com.
2. Johns Manville Corporation: www.jm.com.
3. Owens Corning Corp: www.owenscorning.com.
4. CertainTeed Corporation: www.certainteed.com.

B. Insulation: Non-corrosive, incombustible glass fiber complying with ASTM C1071; rigid board and preformed round liner board; impregnated surface and edges coated with poly vinyl acetate polymer, or acrylic polymer.
1. Fungi Resistance: ASTM G21.
2. Apparent Thermal Conductivity: Maximum of 0.31 at 75 degrees F.
3. Service Temperature: Up to 250 degrees F.
4. Rated Velocity on Coated Air Side for Air Erosion: 5,000 fpm, minimum.

C. Adhesive: Waterproof, fire-retardant type, ASTM C916.

D. Liner Fasteners: Galvanized steel, self-adhesive pad with integral head.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that ducts have been tested before applying insulation materials.

B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with NAIMA National Insulation Standards.

C. Insulated ducts conveying air below ambient temperature:
1. Provide insulation with vapor barrier jackets.
2. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
3. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.

D. Insulated ducts conveying air above ambient temperature:
1. Provide with or without standard vapor barrier jacket.
2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.

E. Ducts Exposed in Mechanical Equipment Rooms or Finished Spaces (below 10 feet above finished floor): Finish with canvas jacket sized for finish painting.

F. Exterior Applications: Provide insulation with vapor barrier jacket. Cover with with calked aluminum jacket with seams located on bottom side of horizontal duct section.

G. External Duct Insulation Application:
1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
2. Secure insulation without vapor barrier with staples, tape, or wires.
3. Install without sag on underside of duct. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift duct off trapeze hangers and insert spacers.

4. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

H. Duct and Plenum Liner Application:
1. Adhere insulation with adhesive for 90 percent coverage.
2. Secure insulation with mechanical liner fasteners. Refer to SMACNA HVAC Duct Construction Standards for spacing.
3. Seal and smooth joints. Seal and coat transverse joints.
4. Seal liner surface penetrations with adhesive.
5. Duct dimensions indicated are net inside dimensions required for air flow. Increase duct size to allow for insulation thickness.

END OF SECTION 23 3160

SECTION 23 3350
DUCT ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air turning devices/extractors.

B. Duct access doors.

C. Duct test holes.

D. Flexible duct connections.

E. Volume control dampers.

1.02 REFERENCE STANDARDS

A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; National Fire Protection Association; 2012; or as adopted by local Authority Having Jurisdiction.

B. SMACNA (DCS) - HVAC Duct Construction Standards; 2005; or as adopted by local Authority Having Jurisdiction.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide for shop fabricated assemblies including volume control dampers. Include electrical characteristics and connection requirements.

C. Shop Drawings: Indicate for shop fabricated assemblies including volume control dampers.

D. Project Record Drawings: Record actual locations of access doors and test holes.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect dampers from damage to operating linkages and blades.

PART 2 PRODUCTS

2.01 SEE MECHANICAL ENGINEER'S PLANS & DETAILS FOR PRODUCT SELECTIONS/REQUIREMENTS

PART 3 EXECUTION

3.01 INSTALLATION

A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA HVAC Duct Construction Standards. Refer to Section 23 3150 for duct construction and pressure class.

B. Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, combination fire and smoke dampers, and elsewhere as indicated. Provide for cleaning kitchen exhaust ducts in accordance with NFPA 96. Provide minimum 8 x 8 inch size for hand access, size for shoulder access, and as indicated. Provide 4 x 4 inch for balancing dampers only. Review locations prior to fabrication.

C. Provide duct test holes where indicated and required for testing and balancing purposes.

D. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment.

E. For fans developing static pressures of 5.0 inches and over, cover flexible connections with leaded vinyl sheet, held in place with metal straps.

F. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum 2 duct widths from duct take-off.

G. Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

END OF SECTION 23 3350

SECTION 23 3710

AIR OUTLETS AND INLETS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Diffusers.

B. Registers/grilles.

1.02 REFERENCE STANDARDS

A. SMACNA (DCS) - HVAC Duct Construction Standards; Current Edition.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements for submittal procedures.

B. HVAC equipment/system shall be tested and balanced to with 8% of design air volumes; with a report from a certified testing engineer attesting thereto.

PART 2 PRODUCTS

2.01 SEE MECHANICAL ENGINEER'S PLANS & DETAILS FOR PRODUCT SELECTIONS/REQUIREMENTS

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.

C. Install diffusers to ductwork with air tight connection.

D. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.

E. Paint ductwork visible behind air outlets and inlets matte black. Refer to Section 09900.

END OF SECTION 23 3710

SECTION 23 5400
FORCED AIR FURNACES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Forced air furnaces.

B. Controls.

1.02 REFERENCE STANDARDS

A. ASHRAE Std 52.1 - Gravimetric and Dust-Spot Procedures for Testing Air-Cleaning Devices Used in General Ventilation for Removing Particulate Matter; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.; 1992.

B. NFPA 54 - National Fuel Gas Code; National Fire Protection Association; 2012.

C. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; National Fire Protection Association; 2012.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.

C. Shop Drawings: Indicate assembly, required clearances, and location and size of field connections.

D. Manufacturer's Instructions: Indicate rigging, assembly, and installation instructions.

E. Project Record Documents: Record actual locations of components and connections.

F. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listing.

G. Warranty: Submit manufacturers warranty and ensure forms have been filled out in Owner s name and registered with manufacturer.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01600 - Product Requirements, for additional provisions.
   2. Extra Filters: One for each furnace.

1.04 REGULATORY REQUIREMENTS

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.05 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.

B. Provide three year manufacturers warranty for solid state ignition modules.

C. Provide five year manufacturers warranty for heat exchangers.

PART 2 PRODUCTS

2.01 SEE MECHANICAL ENGINEER'S PLANS FOR SELECTIONS & DETAILS.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrates are ready for installation of units and openings are as indicated on shop drawings.

B. Verify that proper power supply is available and located correctly.

C. Verify that proper fuel supply is available for connection.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions and requirements of authorities having jurisdiction.

B. Install in accordance with NFPA 90A.

C. Install gas fired furnaces in accordance with NFPA 54.

D. Provide vent connections in accordance with NFPA 211.

E. Pipe drain from humidifier to nearest floor drain.

END OF SECTION 23 5400

SECTION 23 6215

AIR COOLED CONDENSING UNITS

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ASHRAE Std 15 - Safety Standard for Refrigeration Systems; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.; 2010 (ANSI/ASHRAE Std 15).

B. ASHRAE Std 23.1 - Methods of Testing for Rating Positive Displacement Refrigerant Compressors and Condensing Units; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.; 2010.

C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2008.

1.02 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide rated capacities, weights specialties and accessories, electrical nameplate data, and wiring diagrams. Include equipment served by condensing units in submittal, or submit at same time, to ensure capacities are complementary.

C. Shop Drawings: Indicate components, assembly, dimensions, weights and loadings, required clearances, and location and size of field connections. Include schematic layouts showing condensing units, cooling coils, refrigerant piping, and accessories required for complete system.

D. Manufacturer's Instructions: Submit manufacturer's complete installation instructions.

E. Operation and Maintenance Data: Include start-up instructions, maintenance instructions, parts lists, controls, and accessories.

F. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01600 - Product Requirements, for additional provisions.
   2. Extra Lubricating Oil: One complete change.

1.03 QUALITY ASSURANCE

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.

1.05 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.

B. Provide a five year warranty to include coverage for refrigerant compressors.

PART 2 PRODUCTS

2.01 SEE MECHANICAL ENGINEER'S PLANS AND NOTES FOR PRODUCT SELECTIONS.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's installation instructions.

B. Complete structural, mechanical, and electrical connections in accordance with manufacturer's installation instructions.

C. Provide for connection to electrical service. Refer to Section 16155.

D. Install units on concrete base as recommended by manufacturer. Refer to Section 03300. Coordinate install of concrete pad with other site work.

E. Provide connection to refrigeration piping system and evaporators. Comply with ASHRAE Std 15.

3.02 SYSTEM STARTUP

A. Supply initial charge of refrigerant and oil for each refrigeration system. Replace losses of oil or refrigerant prior to end of correction period.

B. Charge system with refrigerant and test entire system for leaks after completion of installation. Repair leaks, put system into operation, and test equipment performance.

C. Shut-down system if initial start-up and testing takes place in winter and machines are to remain inoperative. Repeat start-up and testing operation at beginning of first cooling season.

D. Provide cooling season start-up, and winter season shut-down for first year of operation.

E. Inspect and test for refrigerant leaks every 90 days during first year of operation.

END OF SECTION 23 6215

SECTION 26 0518

BUILDING WIRE AND CABLE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Single conductor building wire.

B. Metal-clad cable.

C. Wiring connectors.

D. Electrical tape.

E. Heat shrink tubing.

F. Oxide inhibiting compound.

1.02 REFERENCE STANDARDS

A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2001 (Reapproved 2007).

B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011.

C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010.

D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2009).

E. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2010.

F. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; Current edition.

G. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; National Electrical Manufacturers Association; Current edition (ANSI/NEMA WC 70/ICEA S-95-658).

H. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; Current edition.

I. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

J. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.

K. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.

L. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.

M. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.

N. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.

O. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

P. UL 1569 - Metal-Clad Cables; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
3. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

D. Project Record Documents: Record actual installed circuiting arrangements. Record actual routing for underground circuits.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70; Current edition.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F, unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 PRODUCTS

2.01 SEE ELECTRICAL ENGINEER'S PLANS & DETAILS FOR PRODUCT SELECTIONS & REQUIREMENTS.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that interior of building has been protected from weather.

B. Verify that work likely to damage wire and cable has been completed.

C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.

D. Verify that field measurements are as shown on the drawings.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Circuiting Requirements:
   1. Unless dimensioned, circuit routing indicated is diagrammatic.
   2. When circuit destination is indicated and routing is not shown, determine exact routing required.
   3. Arrange circuiting to minimize splices.
   4. Include circuit lengths required to install connected devices within 10 ft of location shown.
   5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
   6. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
   7. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are shown as separate, combining them together in a single raceway is permitted, under the following conditions:
      a. Provide no more than six current-carrying conductors in a single raceway. Dedicated neutral conductors are considered current-carrying conductors.
      b. Increase size of conductors as required to account for ampacity derating.
      c. Size raceways, boxes, etc. to accommodate conductors.

B. Install products in accordance with manufacturer's instructions.

C. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.

D. Exposed Cable Installation (only where specifically permitted):
   1. Route cables parallel or perpendicular to building structural members and surfaces.
   2. Protect cables from physical damage.

E. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.

1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
2. Installation in Vertical Raceways: Provide supports where vertical rise exceeds permissible limits.

F. Terminate cables using suitable fittings.
1. Metal-Clad Cable (Type MC):
   a. Use listed fittings.
   b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.

G. Install conductors with a minimum of 12 inches of slack at each outlet.

H. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet of slack.

I. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.

J. Make wiring connections using specified wiring connectors.
1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
3. Do not remove conductor strands to facilitate insertion into connector.
4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.

K. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
3. Wet Locations: Use heat shrink tubing.

L. Insulate ends of spare conductors using vinyl insulating electrical tape.

M. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07840.

N. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.03 FIELD QUALITY CONTROL

A. Perform inspection, testing, and adjusting in accordance with Section 01400.

B. Inspect and test in accordance with NETA STD ATS, except Section 4.

C. Perform inspections and tests listed in NETA STD ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is required.

D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION 26 0518

SECTION 26 0537

BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.

B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.

C. Boxes for hazardous (classified) locations.

1.02 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.

B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; National Electrical Contractors Association; 2010.

C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association; 2012 (ANSI/NEMA FB 1).

D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; National Electrical Manufacturers Association; 2008 (Revised 2010) (ANSI/NEMA OS 1).

E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2008.

F. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.

H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.

I. UL 508A - Industrial Control Panels; Current Edition, Including All Revisions.

J. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
6. Coordinate the work with other trades to preserve insulation integrity.
7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
8. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for outlet and device boxes, junction and pull boxes, cabinets and enclosures, and floor boxes.

C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

D. Project Record Documents: Record actual locations for outlet and device boxes, pull boxes, cabinets and enclosures, floor boxes, and underground handhole enclosures.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 SEE ELECTRICAL ENGINEER'S PLANS & DETAILS FOR PRODUCT SELECTIONS & REQUIREMENTS.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on drawings.

B. Verify that mounting surfaces are ready to receive boxes.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.

E. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.

F. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.

G. Box Locations:
   1. Locate boxes to be accessible. Provide access panels in accordance with Section 08310 as required where approved by the Architect.
   2. Unless dimensioned, box locations indicated are approximate.
   3. Locate boxes as required for devices installed under other sections or by others.
   4. Locate boxes so that wall plates do not span different building finishes.
   5. Locate boxes so that wall plates do not cross masonry joints.
   6. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
   7. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches horizontal separation unless otherwise indicated.
   8. Acoustic-Rated Walls: Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches horizontal separation.
   9. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Architect:
      a. Concealed above accessible suspended ceilings.
      b. Within joists in areas with no ceiling.
      c. Electrical rooms.
      d. Mechanical equipment rooms.

H. Install boxes plumb and level.

I. Flush-Mounted Boxes:
   1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
   2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.

3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.

J. Install boxes as required to preserve insulation integrity.

K. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

L. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07840.

M. Close unused box openings.

N. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.

O. Provide grounding and bonding in accordance with other section(s) of this project manual.

3.03 CLEANING

A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.04 PROTECTION

A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION 26 0537

SECTION 26 2725
WIRING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall switches.

B. Receptacles.

C. Wall plates.

1.02 REFERENCE STANDARDS

A. FS W-C-596 - Connector, Electrical, Power, General Specification for; Federal Specification; Revision G, 2001.

B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush-mounted (General Specification); Federal Specification; Revision F, 1999.

C. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.

D. NEMA WD 1 - General Color Requirements for Wiring Devices; National Electrical Manufacturers Association; 1999 (R 2005).

E. NEMA WD 6 - Wiring Device -- Dimensional Requirements; National Electrical Manufacturers Association; 2002 (R2008).

F. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.

H. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.

I. UL 514D - Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.

J. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.

B. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.

C. Coordinate the placement of outlet boxes for wall switches with actual installed door swings.

D. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.

E. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

C. Operation and Maintenance Data:
   1. GFI Receptacles: Include information on status indicators and testing procedures and intervals.

D. Project Record Documents: Record actual installed locations of wiring devices.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01600 - Product Requirements, for additional provisions.
   2. Extra Wall Plates: One of each style, size, and finish.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Store in a clean, dry space in original manufacturer's packaging until ready for installation.

PART 2 PRODUCTS

2.01 SEE ELECTRICAL ENGINEER'S PLANS & DETAILS FOR PRODUCT SELECTIONS & REQUIREMENTS.

2.02 APPLICATIONS

A. Provide wiring devices suitable for intended use and with ratings adequate for load served.

B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.

C. Provide weather resistant GFI receptacles with specified weatherproof covers for all receptacles installed outdoors or in damp or wet locations.

D. Provide GFI protection for all receptacles installed within 6 feet of sinks.

E. Provide GFI protection for all receptacles serving electric drinking fountains.

F. Unless noted otherwise, do not use combination switch/receptacle devices.

2.03 ALL WIRING DEVICES

A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.04 WALL PLATES

A. All Wall Plates: Comply with UL 514D.
   1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
   2. Size: Standard; .
   3. Screws: Metal with slotted heads finished to match wall plate finish.

B. Aluminum Wall Plates: Smooth satin finish, clear anodized, factory-coated to inhibit oxidation.

C. Galvanized Steel Wall Plates: Rounded corners and edges, with corrosion resistant screws.

D. Weatherproof Covers for Damp Locations: Gasketed, cast aluminum, with self-closing hinged cover and corrosion-resistant screws; listed as suitable for use in wet locations with cover closed.

E. Weatherproof Covers for Wet Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.

C. Verify that wall openings are neatly cut and will be completely covered by wall plates.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

E. Verify that core drilled holes for poke-through assemblies are in proper locations.

F. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.

B. Coordinate locations of outlet boxes provided under Section 16138 as required for installation of wiring devices provided under this section.
   1. Mounting Heights: Unless otherwise indicated, as follows:

a. Wall Switches: 48 inches above finished floor.
b. Receptacles: 18 inches above finished floor or 6 inches above counter.

2. Where multiple receptacles, wall switches, or wall dimmers are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
3. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.

C. Install wiring devices in accordance with manufacturer's instructions.

D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

E. Where required, connect wiring devices using pigtails not less than 6 inches long. Do not connect more than one conductor to wiring device terminals.

F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.

G. Provide GFI receptacles with integral GFI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.

H. Install wiring devices plumb and level with mounting yoke held rigidly in place.

I. Install wall switches with OFF position down.

J. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.

K. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.

L. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

3.04 FIELD QUALITY CONTROL

A. Perform field inspection, testing, and adjusting in accordance with Section 01400.

B. Inspect each wiring device for damage and defects.

C. Operate each wall switch, wall dimmer, and fan speed controller with circuit energized to verify proper operation.

D. Test each receptacle to verify operation and proper polarity.

E. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.

F. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.05 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

B. Adjust presets for wall dimmers according to manufacturer's instructions as directed by Architect.

3.06 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION 26 2725

SECTION 26 5100
INTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Emergency lighting units.

B. Exit signs.

C. LED retrofit luminaire conversion kits.

1.02 REFERENCE STANDARDS

A. IES LM-63 - IESNA Standard File Format for Electronic Transfer of Photometric Data and Related Information; 2002 (Reaffirmed 2008).

B. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules; 2015, with Errata (2017).

C. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems; 2006.

D. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; 2006.

E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

F. NFPA 101 - Life Safety Code; 2015.

G. UL 924 - Emergency Lighting and Power Equipment; Current Edition, Including All Revisions.

H. UL 1598C - Light-Emitting Diode (LED) Retrofit Luminaire Conversion Kits; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
   2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
   3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
   4. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
   1. LED Luminaires:
      a. Include estimated useful life, calculated based on IES LM-80 test data.
   2. Provide electronic files of photometric data certified by a National Voluntary Laboratory Accreditation Program (NVLAP) lab or independent testing agency in IES LM-63 standard format upon request.
   3. LED Retrofit Luminaire Conversion Kits: Include list of compatible luminaires and/or criteria for compatibility.

C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

D. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

E. Project Record Documents: Record actual connections and locations of luminaires and any associated remote components.

1.05 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Receive, handle, and store products according to manufacturer's written instructions.

B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.07 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide three year manufacturer warranty for LED luminaires, including drivers.

C. Provide five year pro-rata warranty for batteries for emergency lighting units.

D. Provide five year pro-rata warranty for batteries for self-powered exit signs.

PART 2 PRODUCTS

2.01 SEE ELECTRICAL ENGINEER'S PLANS & DETAILS FOR PRODUCT SELECTIONS & REQUIREMENTS.

2.02 EMERGENCY LIGHTING UNITS

A. Description: Emergency lighting units complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.

B. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.

C. Battery:
   1. Size battery to supply all connected lamps, including emergency remote heads where indicated.

D. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.

E. Provide low-voltage disconnect to prevent battery damage from deep discharge.

F. Accessories:
   1. Provide compatible accessory mounting brackets where indicated or required to complete installation.

2.03 EXIT SIGNS

A. Description: Exit signs and similar signs for special purpose applications such as area of refuge/rescue assistance.

B. Description: Internally illuminated exit signs with LEDs unless otherwise indicated; complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
   1. Number of Faces: Single or double as indicated or as required for the installed location.
   2. Directional Arrows: As indicated or as required for the installed location.

C. Self-Powered Exit Signs:
   1. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
   2. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
   3. Provide low-voltage disconnect to prevent battery damage from deep discharge.

D. Accessories:
   1. At exterior exit doors, include remote emergency light head to illuminate ground area immediately outside the door.

2.04 LED RETROFIT LUMINAIRE CONVERSION KITS

A. Description: Light-emitting diode (LED) retrofit luminaire conversion kits, including but not limited to LED lamps and arrays, control modules, drivers, power supplies, wiring, lampholders, brackets, wire connectors, reflectors, and diffusers, intended for replacement of existing light sources in existing luminaires; listed as complying with UL 1598C; suitable for installation in luminaire to be converted.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.

C. Verify that suitable support frames are installed where required.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of luminaires provided under this section.

B. Install products in accordance with manufacturer's instructions.

C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).

D. Provide required support and attachment in accordance with Section 26 0529.

E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.

F. Suspended Ceiling Mounted Luminaires:
   1. Do not use ceiling tiles to bear weight of luminaires.
   2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
   3. Secure pendant-mounted luminaires to building structure.
   4. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
   5. In addition to ceiling support wires, provide two galvanized steel safety wire(s), minimum 12 gage, connected from opposing corners of each recessed luminaire to building structure.
   6. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.

G. Recessed Luminaires:
   1. Install trims tight to mounting surface with no visible light leakage.
   2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.

H. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.

I. Install accessories furnished with each luminaire.

J. Bond products and metal accessories to branch circuit equipment grounding conductor.

K. Emergency Lighting Units:
   1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.

L. Exit Signs:
   1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.

M. Install lamps in each luminaire.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Inspect each product for damage and defects.

C. Operate each luminaire after installation and connection to verify proper operation.

D. Test self-powered exit signs and emergency lighting units to verify proper operation upon loss of normal power supply.

E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.05 ADJUSTING

A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.

B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Architect or authority having jurisdiction.

C. Exit Signs with Field-Selectable Directional Arrows: Set as indicated or as required to properly designate egress path as directed by Architect or authority having jurisdiction.

3.06 CLEANING

A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

A. See Section 01 7800 - Closeout Submittals, for closeout submittals.

B. Demonstration: Demonstrate proper operation of luminaires to Architect, and correct deficiencies or make adjustments as directed.

C. Just prior to Substantial Completion, replace all lamps that have failed.

3.08 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

END OF SECTION 26 5100

SECTION 26 5650
EXTERIOR LUMINAIRES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior luminaires.

B. Lamps.

1.02 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.

B. NECA/IESNA 501 - Recommended Practice for Installing Exterior Lighting Systems; 2006.

C. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

D. UL 1598 - Luminaires; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Shop Drawings:
   1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.

C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

E. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01600 - Product Requirements, for additional provisions.
   2. Extra Lamps: Ten percent of total quantity installed for each type, but not less than two of each type.

G. Project Record Documents: Record actual connections and locations of pole foundations, luminaires, and any pull or junction boxes.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.

B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

C. Receive, handle, and store wood poles in accordance with ANSI O5.1.

PART 2 PRODUCTS

2.01 SEE ELECTRICAL ENGINEER'S PLANS & DETAILS FOR PRODUCT SELECTIONS & REQUIREMENTS.

2.02 LUMINAIRES

A. Provide products that comply with requirements of NFPA 70.

B. Provide products that are listed and labeled as complying with UL 1598, where applicable.

C. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.

E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.

F. Provide luminaires listed and labeled as suitable for wet locations unless otherwise indicated.

G. LED Luminaires: Listed and labeled as complying with UL 8750.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.

C. Verify that suitable support frames are installed where required.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Coordinate locations of outlet boxes provided under Section 16138 as required for installation of luminaires provided under this section.

B. Install products according to manufacturer's instructions.

C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship) and NECA/IESNA 501 (exterior lighting).

D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.

E. Recessed Luminaires:
   1. Install trims tight to mounting surface with no visible light leakage.
   2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.
   3. Luminaires Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.
   4. Luminaires in exteior soffit: Trim rings to match color of soffit as closely as practical.

F. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.

G. Install accessories furnished with each luminaire.

H. Bond products and metal accessories to branch circuit equipment grounding conductor.

I. Install lamps in each luminaire.

3.04 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for additional requirements.

B. Inspect each product for damage and defects.

C. Operate each luminaire after installation and connection to verify proper operation.

D. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

E. Measure illumination levels at night with calibrated meters to verify conformance with performance requirements. Record test results in written report to be included with submittals.
   1. Test according to IESNA LM-64 (parking areas).

3.05 ADJUSTING

A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.

B. Luminaires with Field-Rotatable Optics: Position optics according to manufacturer's instructions to achieve lighting distribution as indicated or as directed by Architect.

3.06 CLEANING

A. Clean surfaces according to NECA/IESNA 501 and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

A. Demonstration: Demonstrate proper operation of luminaires to Architect, and correct deficiencies or make adjustments as directed.

B. Just prior to Substantial Completion, replace all lamps that have failed.

3.08 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

END OF SECTION 26 5650

SECTION 27 0000
COMMUNICATIONS

PART 1 GENERAL

1.01 SUMMARY

A. Provide communications systems.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.

C. Operation and Maintenance Data: Submit manufacturer's operation and maintenance data, including operating instructions, list of spare parts and maintenance schedule.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers, which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Compliance: FCC regulations.

PART 2 PRODUCTS

2.01 SEE ELECTRICAL ENGINEER'S PLANS & DETAILS FOR PRODUCT SELECTIONS & REQUIREMENTS.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials in proper relation with adjacent construction and with uniform appearance for exposed work. Coordinate with work of other sections. Comply with applicable regulations and code requirements. Provide proper clearances for servicing.

B. Maintain indicated fire ratings of walls, partitions, ceilings and floors at penetrations. Seal with firestopping to maintain fire rating.

C. Clearly label and tag all components.

D. Test and balance all systems for proper operation.

E. Restore damaged finishes. Clean and protect work from damage.

F. Instruct Owner's personnel in proper operation of systems.

END OF SECTION 27 0000

SECTION 27 2126

VOICE COMMUNICATIONS

PART 1 GENERAL

1.01 SUMMARY

A. Provide voice communications systems.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.

C. Operation and Maintenance Data: Submit manufacturer's operation and maintenance data, including operating instructions, list of spare parts and maintenance schedule.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers, which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Compliance: FCC regulations.

PART 2 PRODUCTS

2.01 SEE ELECTRICAL ENGINEER'S PLANS & DETAILS FOR PRODUCT SELECTIONS & REQUIREMENTS.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials in proper relation with adjacent construction and with uniform appearance for exposed work. Coordinate with work of other sections. Comply with applicable regulations and code requirements. Provide proper clearances for servicing.

B. Maintain indicated fire ratings of walls, partitions, ceilings and floors at penetrations. Seal with firestopping to maintain fire rating.

C. Clearly label and tag all components.

D. Test and balance all systems for proper operation.

E. Restore damaged finishes. Clean and protect work from damage.

F. Instruct Owner's personnel in proper operation of systems.

END OF SECTION 27 2126

DVISION 31 1100

SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Prepare site for rough grading and structure excavation as described in Contract Documents.

B. Related Sections (See Table of Contents for Division Number)
   1. Section 02051 - General Site Construction Requirements
   2. Section 02312 - Finish grading of existing topsoil stored on site and addition of imported topsoil.

1.2 DEFINITIONS

A. Existing topsoil is defined as total amount of soil stripped and stored for reuse, less vegetation layer stripped and disposed of as specified in Paragraph 3.1,C below.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 PERFORMANCE

A. Tree And Brush Removal
   1. Cut off trees, shrubs, brush, and vegetative growth 12 inches maximum above ground.
   2. Do not pull up or rip out roots of trees and shrubs that are to remain. If excavation through roots is required, excavate by hand and cut roots with sharp axe. Make clean, smooth, sloping cuts.
   3. Cut roots 6 inches or larger in diameter only with Architect's written permission.

B. Grubbing
   1. Grub out stumps and roots 12 inches minimum below original ground surface, except as follows -
      a. Under buildings, remove roots one inch and larger entirely.
      b. Entirely remove roots of plants which normally sprout from roots, as identified by Architect.

C. Stripping
   1. Strip existing vegetation layer 6 inches deep minimum from areas of site to receive buildings, landscaping, and paving and remove from site prior to stripping topsoil for storage and reuse.
   2. After stripping vegetation layer, strip existing topsoil 6 additional inches deep minimum from areas of site to receive buildings and paving and store on site for later use.
      a. Existing topsoil is property of Contractor with restriction that topsoil is to be used first for Project landscape topsoil requirements and second for fill and backfill.
      b. After Project fill, backfill, and landscape topsoil requirements are satisfied, remove excess existing topsoil from site. Do not remove existing topsoil from site without Architect's written approval.

3.3 CLEANING

A. Remove from site trees, shrubs, uprooted stumps, vegetative layer, and surface debris and dispose of legally.

B. Do not bury cuttings, stumps, roots, and other vegetative matter or burnt waste material on site.

END OF SECTION

DIVISION 31 2213

ROUGH GRADING

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Perform rough grading work required to prepare site for construction as described in Contract Documents.

B. Related Sections
   1. Section 02051 - General Site Construction Requirements

1.2 QUALITY ASSURANCE

A. Pre-Installation Conference
   1. Schedule conference after completion of site clearing but before beginning grading work.
   2. Identify benchmark to be used in establishing grades and review Contract Document requirements for grades, fill materials, and topsoil.
   3. Examine site to pre-plan procedures for making cuts, placing fills, and other necessary work.

PART 2 PRODUCTS

2.1 MATERIALS

A. Materials used for fill shall be as specified for backfill in Section 02315.

PART 3 EXECUTION

3.1 PREPARATION

A. Before making cuts, remove topsoil over areas to be cut and filled that was not previously removed by stripping specified in Section 02230. Stockpile this additional topsoil with previously stripped topsoil.

3.2 PERFORMANCE

A. Site Tolerances
   1. Maximum variation from required grades shall be 1/10 of one foot.
   2. To allow for final finish grades of parking lot and planting areas, rough grade elevations before placing topsoil are -
      a. Sod Areas - 7 inches below top of walk or curb.
      b. Seeded Areas And Ground Cover Areas - 6 inches below top of walk or curb.
      c. Shrub Areas - 15 inches below top of walk or curb

B. When existing grade around existing plants to remain is higher than new finish grade, perform regrading by hand. Do not expose or damage shrub or tree roots.

C. Compact fills as specified in Section 02315.

D. If soft spots, water, or other unusual and unforeseen conditions affecting grading requirements are encountered, stop work and notify Architect.

END OF SECTION

DIVISION 31 2313

EXCAVATION AND FILL

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Perform Project excavating, trenching, backfilling, and compacting as described in Contract Documents, except as specified below.
   2. Procedure and quality for excavating, trenching, backfilling, and compacting performed on Project under other Sections unless specifically specified otherwise.

B. Related Sections (See Table of Contents for Division Numbers)
   1. Section 02051 - General Site Construction Requirements
   2. Section 02230 - Site Clearing
   3. Sections Under 02500 Heading - Utility Services
   4. Section 02630 - Storm Drainage
   5. Sections Under 02700 Heading - Compaction of sub-grade under walks and paving
   6. Performance of excavating, backfilling, and compacting inside and outside of building required for electrical and mechanical work is responsibility of respective Section doing work unless arranged differently by Contractor.

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM D 1557-00, 'Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort'
   2. ASTM D 2216-98, 'Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock'
   3. ASTM D 2487-00, 'Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)'
   4. ASTM D 2922-96, 'Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)'
   5. ASTM D 3017-96, 'Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)'

1.3 DEFINITIONS

A. Relative Compaction - Ratio of field dry density as determined by ASTM D 2922 and ASTM D 3017 or 2216, and laboratory maximum dry density as determined by ASTM D 1557.

1.4 QUALITY ASSURANCE

A. Pre-Installation Conference - Participate in pre-installation conference specified in Section 02311.

1.5 SEQUENCING

A. Do not backfill against bituminous dampproofing for 24 hours after application of dampproofing.

B. Before backfilling, show utility and service lines being covered on record set of Drawings. Do not backfill until utilities involved have been tested and approved by Architect and until instructed by Architect.

PART 2 PRODUCTS

2.1 MATERIALS

A. Site Material - Existing excavated material on site is suitable for use as fill and backfill to meet Project requirements.

B. Imported Fill / Backfill
   1. Well graded material conforming to ASTM D 2487 free from debris, organic material, frozen materials, brick, lime, concrete, and other material which would prevent adequate performance of backfill.
      a. Under Building Footprint And Paved Areas - Fill shall comply with soil classification groups GW, GP, GM, SW, SP, or SM. Fill may not contain stones over 6 inches diameter and 90 percent minimum of fill shall be smaller than 1-1/2 inch in any direction.
      b. Under Landscaped Areas -
         1) Fill more than 36 inches below finish grade shall comply with soil classification groups GW, GP, GM, SW, SP, or SM. Fill may not contain stones over 6 inches diameter and 90 percent minimum of fill shall be smaller than 1-1/2 inch in any direction.
         2) Fill less than 36 inches below finish grade shall comply with soil classification groups SW, SP, SM, or SC. Fill may not contain stones larger than 1-1/2 inches in any direction and 90 percent minimum of fill shall be smaller than 3/8 inch in any direction.

C. Excavatable Slurry Fill / Backfill
   1. Contain maximum of 94 lbs of cement per yard of slurry fill / backfill.
   2. Minimum stable air content of 20 percent, Darafill dosage as necessary.
   3. Maximum water content of 36 gallons per yard of backfill.
   4. Maximum compressive strength of 150 psi at 28 days.
   5. Acceptable Products -
      a. Darafill by W R Grace & Co, Cambridge MA (800) 354-5414 www.gcp-grace.com
      b. Equal as approved by Architect before use. See Section 01600.

D. Engineered Fill
   1.

PART 3 EXECUTION

3.1 EXAMINATION

A. Carefully examine site and available information to determine type soil to be encountered. Discuss problems with Architect before proceeding with work.

3.2 PREPARATION

A. Protection of Existing Utilities
   1. Protect existing utilities identified in Contract Documents during excavation.
   2. If existing utility lines not identified in Contract Documents are encountered, contact Architect before proceeding.

B. Before placing fill, base, or finish work, prepare sub-grade as follows
   1. Under Building Slabs / Pads, Concrete Site Elements, And Portland Cement Concrete Driveways And Parking Areas - Scarify sub-grade 6 inches deep, moisture condition to uniform moisture content of between optimum and 4 percent over optimum, and mechanically tamp 6 inches deep to 90 percent minimum of relative compaction.
   2. Under Asphalt Concrete Driveways And Parking Areas - Scarify sub-grade 6 inches deep, moisture condition to uniform moisture content between optimum and 4 percent over optimum, and mechanically tamp to 95 percent minimum of relative compaction.
   3. Landscape Areas - Compact sub-grade to 85 percent relative compaction.

3.3 PERFORMANCE

A. Excavation
   1. Building Footings And Foundations -
      a. Excavate as necessary for proper placement and forming of footings and foundations.
      b. Bottom of excavations to receive footings shall be undisturbed soil.
      c. Excavation Carried Deeper Than Required -
         1) Under Footings - Fill with concrete specified for footings.
         2) Under Slabs - Use specified compacted backfill material.
   2. Pavement And Concrete Site Elements -
      a. Excavate as necessary for proper placement and forming of concrete site elements and pavement structure. Remove vegetation and deleterious material and remove from site.
      b. Backfill over-excavated areas with compacted base material specified in Sections under 02700 heading.
      c. Remove and replace exposed material which becomes soft or unstable.
   3. Utility Trenches -
      a. Unless otherwise indicated, excavation shall be open cut. Short sections of trench may be tunneled if pipe or duct can be safely and properly installed and backfill can be properly tamped in tunnel sections and if approved by Architect.
      b. Excavate to proper alignment, depth, and grade. Excavate to sufficient width to allow adequate space for proper installation and inspection of utility piping.
      c. If trenches are excavated deeper than required, backfill until trench bottom is proper depth with properly compacted native material.
      d. Pipe 4 Inches In Diameter Or Larger -
         1) Grade bottom of trenches to provide uniform bearing and support for each section of pipe on undisturbed soil at every point along its length.
         2) Except where rock is encountered, take care not to excavate below depths indicated.
            a) Where rock excavations are required, excavate rock with minimum over-depth of 4 inches below required trench depths.
            b) Backfill over-depths in rock excavation and unauthorized over-depths with loose, granular, moist earth, thoroughly compacted.
         3) Whenever wet or unstable soil incapable of properly supporting pipe, as determined by Architect, occurs in bottom of trench, remove soil to depth required and backfill trench to proper grade with coarse sand, fine gravel, or other suitable material acceptable to Architect.
   4. If unusual excavating conditions are encountered, stop work and notify Architect.

B. Fill / Backfill
   1. General -
      a. Around Buildings And Structures - Slope grade away from building as specified in Section 02312. Hand backfill when close to building or where damage to building might result.
      b. Site Utilities -
         1) In Landscape Areas - Use backfill consisting of on-site soil.
         2) Under Pavement And Concrete Site Elements - Extend excavatable slurry fill / backfill to elevation of subgrade. Do not place base material until excavatable slurry fill / backfill has cured 72 hours.
      c. Do not use puddling or jetting to consolidate fill areas.
   2. Compacting -

a. Fill / Backfill And Base -
   1) Under Building Slabs or Pads, Driveways, And Parking Areas - Place in 8 inch maximum layers, dampen (do not soak), and mechanically tamp to 95 percent minimum of maximum density as established by ASTM D 1557.
   2) Under Concrete Site Elements And Around Foundation Walls - Place in 8 inch maximum layers, dampen (do not soak), and mechanically tamp to 90 percent minimum of maximum density as established by ASTM D 1557.
   3) Utility Trenches -
      a) Site - Place fill in 12 inch layers and moisture condition to plus or minus 2 percent of optimum moisture content. Compact fill to 90 percent minimum relative compaction to within 12 inches of finish grade. Compact fill above 12 inches to 85 percent relative compaction
      b) Under Slabs - Place fill in 6 inch layers, moisture condition to plus or minus 2 percent of optimum moisture content, and compact to 95 percent minimum relative compaction to within 4 inches of finish grade. Final 4 inches of fill shall be granular base as specified in Section 02316.
   4) Fill Slopes - Compact by rolling or using sheepsfoot roller.
   5) Backfill Under Footings - Not allowed.
   6) Other Backfills - Place other fills in 12 inch layers and compact to 90 percent relative compaction.
b. Engineered Fill -
   1)

3.4 REPAIR / RESTORATION

A. Repair damage to other portions of the Work resulting from work of this Section at no additional cost to Owner. On new work, arrange for damage to be repaired by original installer.

3.5 CLEANING

A. Debris and material not necessary for Project are property of Contractor and are to be removed before completion of Project. However, if material necessary for Project is hauled away, replace with specified fill / backfill material.

END OF DIVISION

DIVISION 31 2316

FINISH GRADING

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Perform finish grading work required to prepare site for installation of landscaping as described in Contract Documents.

B. Related Sections (See Table of Contents for Division Numbers)
   1. Section 02051 - General Site Construction Requirements
   2. Section 02230 - Stripping and storing of existing topsoil
   3. Section 02917 - Soil amendments

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM 1557-91, 'Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort'

1.3 SUBMITTALS

A. Quality Assurance / Control
   1. Submit test on imported topsoil by licensed laboratory prior to use, using criteria on Owner Form 3332. Imported topsoil shall meet minimum specified requirements and be approved by Architect prior to use.
   2. Submit report stating location of source of imported topsoil and account of recent use.

1.4 QUALITY ASSURANCE

A. Pre-Installation Conference - Participate in pre-installation conference specified in Section 02311.

PART 2 PRODUCTS

2.1 MATERIALS

A. Imported Topsoil
   1. Fertile, loose, friable soil meeting following criteria -
      a. Chemical Characteristics -
         1) Acidity / alkalinity range - pH 5.5 to 7.7
         2) Soluble Salts - less than 2.0 mmhos/cm
         3) Sodium Absorption Ratio (SAR) - less than 3.0
         4) Organic Matter - greater than one percent
      b. Physical Characteristics -
         1) Gradation as defined by USDA triangle of physical characteristics as measured by hydrometer.
            Sand - 15 to 60 percent
            Silt - 10 to 60 percent
            Clay - 5 to 30 percent
         2) Clean and free from toxic minerals and chemicals, noxious weeds, rocks larger than 1-1/2 inch in any dimension, and other objectionable materials.
         3) Soil shall not contain more than 2 percent of particles measuring over 1/16 inch in largest size.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not commence work of this Section until grading tolerances specified in Section 02311 are met.

3.2 PREPARATION

A. Protection - Protect utilities and site elements from damage.

B. Surface Preparation
   1. Before grading, dig out weeds from planting areas by their roots and remove from site. Before placing topsoil in landscape areas, remove rocks larger than 1-1/2 inches in size and foreign matter such as building rubble, wire, cans, sticks, concrete, etc.
   2. Before placing topsoil, remove imported paving base material present in planting areas down to natural subgrade or other material acceptable to Architect.
   3. Disk, till, or aerate with approved agricultural aerator to depth of 6 inches.
   4. Limit use of heavy equipment to areas no closer than 6 feet from building or other permanent structures. Use hand held tillers for preparation of subsoil in areas closer then 6 feet.

3.3 PERFORMANCE

A. Site Tolerances
   1. Total Topsoil Depth -
      a. Lawn And Groundcover Planting Areas - 5 inches minimum
      b. Shrub Planting Areas - 12 inches minimum throughout entire shrub bed area.
   2. Elevation of topsoil relative to walks or curbs before adding soil amendments specified in Section 02917 -
      a. Seeded Lawn Areas - One inch below
      b. Sodded Lawn Areas - 2 inches below
      c. Shrub And Ground Cover Areas - One inch below

B. Do not expose or damage existing shrub or tree roots.

C. Redistribute approved existing topsoil stored on site as a result of work of Section 02230. Remove organic material, rocks and clods greater than 1-1/2 inch in any dimension, and other objectionable materials. Provide additional approved imported topsoil required to bring surface to specified elevation relative to concrete site element.

D. Where topsoil depth is 12 inches or greater, place topsoil in layers not to exceed 12 inches and, to prevent settling, compact to 85 percent relative density in accordance with ASTM D 1557. Do not place topsoil whose moisture content makes it prone to compaction during placement process.

E. Slope grade away from building for 12 feet minimum from walls at slope of 1/2 inch in one ft minimum unless otherwise noted. High point of finish grade at building foundation shall be 6 inches minimum below finish floor level. Direct surface drainage in manner indicated on Drawings by molding surface to facilitate natural run-off of water. Fill low spots and pockets with topsoil and grade to drain properly.

END OF DIVISION

SECTION 31 3116
TERMITE CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Chemical soil treatment.

1.02 REFERENCE STANDARDS

A. Title 7, United States Code, 136 through 136y - Federal Insecticide, Fungicide and Rodenticide Act; 2006.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.

C. Manufacturer's Instructions: Indicate caution requirement.

D. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three (3) years of documented experience.

E. Maintenance Data: Indicate re-treatment schedule .

F. Warranty: Submit warranty and ensure that forms have been completed in Owner's name.

1.04 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide five year installer's warranty against damage to building caused by termites.
   1. Include coverage for repairs to building and to contents damaged due to building damage. Repair damage and, if required, re-treat.

PART 2 PRODUCTS

2.01 CHEMICAL SOIL TREATMENT

A. Toxicant Chemical: EPA (Title 7, United States Code, 136 through 136y) approved; synthetically color dyed to permit visual identification of treated soil.

B. Diluent: Recommended by toxicant manufacturer.

C. Manufacturers:
   1. Bayer Environmental Science Corp; ____: www.backedbybayer.com/pest-management/#sle.
   2. FMC Professional Solutions; ____: www.fmcprosolutions.com/#sle.
   3. Syngenta Professional Products; ____: www.syngentaprofessionalproducts.com/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

D. Mixes: Mix toxicant to manufacturer's instructions.

E. Toxicant Chemical: EPA (1) approved; synthetically color dyed to permit visual identification of treated soil.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.

B. Verify final grading is complete.

3.02 APPLICATION - CHEMICAL TREATMENT

A. Comply with requirements of U.S. EPA and applicable state and local codes.

B. Spray apply toxicant in accordance with manufacturer's instructions.

C. Under slabs, apply toxicant immediately prior to installation of vapor barrier.

D. At foundation walls, apply toxicant immediately prior to finish grading work outside foundations.

E. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.

F. Re-treat disturbed treated soil with same toxicant as original treatment.

G. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

3.03 PROTECTION

A. Do not permit soil grading over treated work.

END OF SECTION 31 3116

DIVISION 32 1123

GRANULAR BASE

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install granular base under interior slabs-on-grade as described in Contract Documents.

B. Products Installed But Not Supplied Under This Section
   1. Under-slab vapor retarder and seam tape.

C. Related Sections (See Table of Contents for Division Numbers)
   1. Section 02051 - General Site Construction Requirements
   2. Section 02742 - Base course under asphalt concrete paving
   3. Section 02753 - Base course under Portland cement concrete paving
   4. Section 02776 - Granular base under concrete site elements
   5. Section 07261 - Furnishing of vapor retarder and seam tape

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM E 1643-98, 'Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs'

1.3 SEQUENCING

A. Install vapor retarder and granular base system after application of termite control and before placing concrete. If termite control is disturbed or receives precipitation before being covered with vapor retarder, re-apply termite control.

PART 2 PRODUCTS

2.1 GRANULAR BASE

A. Gravel - 1/4 inch minimum to one inch maximum well-graded, clean gravel or crushed rock.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install vapor retarder in accordance with ASTM E 1643 and following instructions.
   1. Install vapor retarder over compacted subgrade and tops of interior stem walls so entire area under slab is covered.
   2. Lap joints 3 inches minimum and seal with specified seam tape.
   3. Seal vapor retarder around pipes, conduits, and other utility items which penetrate vapor retarder using factory-fabricated boot installed as recommended by Manufacturer.
   4. Except for punctures required for reinforcing and anchor bolts at top of stem walls, seal tears and punctures before placing granular base.

B. Place 4 inches minimum of granular base over vapor retarder, level, and compact with two passes of 2-1/2 ton minimum roller.

C. Do not allow water onto vapor retarder or granular base before placing concrete.

3.2 FIELD QUALITY CONTROL

A. Notify Architect 2 days before installation of concrete to allow inspection of vapor retarder and granular base installation.

END OF SECTION

DIVISION 32 1313

CAST-IN-PLACE CONCRETE SITE ELEMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Compact sub-base for cast-in-place concrete site elements as described in Contract Documents.
   2. Furnish and install granular base for cast-in-place concrete site elements as described in Contract Documents.
   3. Furnish and install cast-in-place concrete site elements as described in Contract Documents.
   4. Furnish and install sealants as described in Contract Documents.

B. Products Installed But Not Supplied Under This Section
   1. Lightpole base anchors
   2. Pipe bollards
   3. Electric Transformer Pad

C. Related Sections (See Table of Contents for Division Numbers)
   1. Section 02051 - General Site Construction Requirements
   2. Section 02315 - Compaction procedures and tolerances
   3. Section 02813 - Sleeves for underground irrigation system
   4. Section 05120 - Furnishing of pipe for pipe bollards
   6. Section 07920 - Quality of Sealants
   7. Section 10352 - Furnishing of flagpole base and foundation sleeve
   8. Section 16520 - Furnishing of lightpole base anchors

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM D 1751-99, 'Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)'

1.3 QUALITY ASSURANCE

A. Pre-Installation Conferences
   1. Participate in pre-installation conference specified in Section 02311.
   2. Schedule concrete site element pre-installation conference after installation of sleeves, placing of base, and installation of forms, but before placing of concrete.

B. Meet quality assurance / control requirements specified in Section 03313.

PART 2 PRODUCTS

2.1 MATERIALS

A. Formwork - Meet requirements specified in Section 03120.

B. Granular Base
   1. Road Base type gravel or crushed rock, graded as follows -

Sieve	Percent by Weight Passing Sieve
1 inch	100
3/4 inch	85 - 100
No. 4	45 - 60
No. 10	30 - 50
No. 200	5 - 10 (non-plastic)

C. Expansion Joints
   1. 1/2 inch thick.
   2. Manufactured commercial fiber type -
      a. Meet requirements of ASTM D 1751
      b. Acceptable Products -
         1) Conflex by Masonite Building & Industrial Products Group, Chicago, IL (800) 257-7885 www.masonite.com
         2) Sealtight by W R Meadows Inc, Hampshire, IL (800) 342-5976 www.meadows.com
         3) Equal as approved by Architect before installation.
   3. Recycled Vinyl -
      a. Light gray color
      b. Approved Products -
         1) Proflex by Oscoda Plastics Inc, Oscoda, MI (800) 544-9538 www.oscodaplastics.com

D. Concrete - Meet requirements specified in Section 03313 for exterior concrete.

PART 3 EXECUTION

3.1 PREPARATION

A. Sub-Base - Compact sub-base as specified in Section 02315.

3.2 INSTALLATION

A. Granular Base - Except under mow strips, place 4 inches minimum of granular base, level, and compact as specified in Section 02315.

B. Joints
   1. Align joints of sidewalk and curb and gutter.
   2. Expansion And Contraction Joints -
      a. Spacing -
         1) Sidewalks And Curbs - 50 feet on center
         2) Mow Strips - 100 feet on center
         3) Flat Drainage Structures - 50 feet on center
         4) Retaining Walls -
            a) 36 feet on center at walls with guardrails
            b) 50 feet on center at walls with chain link fencing
      b. Install so top of expansion joint material is 1/4 inch below finished surface of concrete.
      c. No expansion joint required between curbs and walks parallel to curb.
      d. Provide expansion joint at end of walks perpendicular to and terminating at curb.
   3. Scored Control Joints -
      a. Spacing -
         1) Curbs - 10 feet on center
         2) Sidewalks - 5 feet on center
         3) Mow Strips - 5 feet on center
         4) Flat Drainage Structures - 10 feet on center
         5) Retaining Walls -
            a) 6 feet on center at walls with guardrails

b) 10 feet on center at walls with chain link fencing

b. Depth of control joints shall be approximately one quarter of concrete slab thickness, but not less than one inch.

C. Finish
1. Curb, Gutter, Sidewalks, Mow Strips, Flat Drainage Structures, Stairs, And Miscellaneous -
   a. Broom finish.
   b. Round edges including edges formed by expansion joints.
   c. Remove edger marks.
2. Light Pole And Flagpole Bases - Exposed portion to have rubbed finish.
3. Retaining Walls -
   a. Immediately after removing forms, remove joints, marks, bellies, projections, loose materials, and cut back metal ties from surfaces to be exposed.
   b. Point up voids with cement mortar, 1:2 mix, and rub exposed surface with carborundum to smooth, even surface.

D. Special Requirements
1. Form vertical surfaces full depth. Do not allow concrete to flow out from under forms in any degree.
2. Sidewalks, Exterior Stairs, And Landings -
   a. Slope sidewalks with cross slope of 1/8 to 1/4 inch per ft in direction of intended drainage.
   b. Slope sidewalks away from building one percent minimum.
   c. Do not dust with cement.
3. Mow Strips -
   a. Granular base not necessary under mow strips. Compact subgrade under mow strip to density of undisturbed earth.
   b. Form and cast mow strips in place.
   c. Set top of mow strip 1-1/2 inches above finish grade.
   d. Compact topsoil underneath mow strip to density of undisturbed earth.
4. Light Pole Bases - Install bond breaker consisting of three layers of 30 lb roofing felt between pole base and adjoining sidewalk.
5. Pipe Bollards - Install plumb and fill with concrete.

3.3 FIELD QUALITY CONTROL

A. Inspection - To allow Architect's verification of grades and elevations, notify Architect three days minimum before placing concrete for specified concrete site elements.

END OF DIVISION

SECTION 32 1726
TACTILE WARNING SURFACING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Plastic tactile and detectable warning tiles for pedestrian walking surfaces.

1.02 REFERENCE STANDARDS

A. 49 CFR 37 - Transportation Services for Individuals with Disabilities (ADA); current edition.

B. AASHTO LRFD - Bridge Design Specifications; 2017.

C. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

E. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2018.

F. ASTM C501 - Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser; 1984 (Reapproved 2015).

G. ASTM C903 - Standard Practice for Preparing Refractory Specimens by Cold Gunning; 2015, with Editorial Revision (2016).

H. ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine; 2011.

I. ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents; 2014.

J. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 1998 (Reapproved 2010).

K. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 2014.

L. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics; 2015.

M. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials; 2016.

N. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2017.

O. ASTM G155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013.

P. ATBCB PROWAG - Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; 2011.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Samples: For each product specified provide two samples, 8 inches square, minimum; show actual product, color, and patterns.

C. Shop Drawings: Submit plan and detail drawings. Indicate:
   1. Locations on project site. Demonstrate compliance with referenced accessibility standards.
   2. Sizes and layout.
   3. Pattern spacing and orientation.
   4. Attachment and fastener details, if applicable

D. Warranty: Submit manufacturer warranty; complete forms in Owner's name and register with manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver to project site in manufacturer's protective wrapping and in manufacturer's unopened packaging.

B. Store covered and elevated above grade and in manufacturer's unopened packaging until ready for installation. Maintain at ambient temperature between 40 and 90 degrees F.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Plastic Tiles: Provide manufacturer's standard five year warranty against manufacturing defects, breakage or deformation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Plastic Tactile and Detectable Warning Surface Tiles:
   1. Access Tile, a brand of Access Products, Inc; _____: www.accesstile.com/#sle.
   2. ADA Solutions, LLC; _____: www.adatile.com/#sle.
   3. Armor-Tile, a brand of Engineered Plastics, Inc; _____: www.armortiletransit.com/#sle.

2.02 TACTILE AND DETECTABLE WARNING DEVICES

A. Plastic Tactile and Detectable Warning Tiles: ADA Standards compliant, glass fiber and carbon fiber reinforced, exterior grade, matte finish polyester sheet with truncated dome pattern, solid color throughout, internal reinforcing of sheet and of truncated domes, integral radius cut lines on back face of tile; with factory applied removable protective sheeting.
   1. Material Properties:
      a. Water Absorption: 0.20 percent, maximum, when tested in accordance with ASTM D570.
      b. Slip Resistance: 0.50 minimum dry static coefficient of friction, when tested in accordance with ASTM D2047.
      c. Compressive Strength: 25,000 pounds per square inch, minimum, when tested in accordance with ASTM D695.
      d. Tensile Strength: 10,000 pounds per square inch, minimum, when tested in accordance with ASTM D638.
      e. Flexural Strength: 25,000 pounds per square inch minimum, when tested in accordance with ASTM D790.
      f. Chemical Stain Resistance: No reaction to 1 percent hydrochloric acid, motor oil, calcium chloride, gum, soap solution, bleach, or antifreeze, when tested in accordance with ASTM D543.
      g. Abrasion Resistance: 300, minimum, when tested in accordance with ASTM C501.
      h. Flame Spread Index: 25, maximum, when tested in accordance with ASTM E84.
      i. Accelerated Weathering: Delta-E of less than 5.0 at 2,000 hours exposure, when tested in accordance with ASTM G155.
      j. Adhesion: No delamination of tile prior to board failure in a temperature range of 20 to 180 degrees F, when tested in accordance with ASTM C903.
      k. Loading: No damage when tested according to AASHTO LRFD test method HS20.
      l. Salt and Spray Performance: No deterioration or other defect after 200 hours of exposure, when tested in accordance with ASTM B117.
   2. Installation Method: Surface applied.
   3. Shape: Rectangular.
   4. Dimensions: 24 inches by 36 inches.
   5. Pattern: In-line pattern of truncated domes complying with ADA Standards.
   6. Color: Pantone #7529C Houston Beige.

2.03 ACCESSORIES

A. Fasteners: ASTM A666, Type 304 stainless steel
   1. Type: Countersunk, color matched composite sleeve anchors
   2. Size: 1/4 inch diameter and 1-1/2 inches long.

B. Adhesive: Type recommended and approved by surfacing tile manufacturer.

C. Sealant: Elastomeric sealant of color to match adjacent surfaces; approved by surfacing tile manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that work area is ready to receive work:
   1. If existing conditions are not as required to properly complete the work of this section, notify Architect.
   2. Do not proceed with installation until deficiencies in existing conditions have been corrected.

B. Verify that dimensions, tolerances, and attachment methods for work in this section are properly coordinated with other work on site.

3.02 INSTALLATION, GENERAL

A. Install in accordance with manufacturer's written instructions.
   1. Do not install damaged, warped, bowed, dented, abraded, or otherwise defective units.
   2. Do not install when ambient or substrate temperature has been below 40 degrees F during the preceding 8 daylight hours.

B. Field Adjustment:
   1. Locate relative to curb line in compliance with ATBCB PROWAG, Sections 304 and 305.
   2. Orient so dome pattern is aligned with the direction of ramp.

C. Install units fully seated to substrate, square to straight edges and flat to required slope.

3.03 INSTALLATION, SURFACE APPLIED PLASTIC TILES

A. Cure concrete surfaces for a minimum of 4 days before installing units.

B. Mechanically roughen surface as required to remove contaminants and prepare surface for adhesive and sealant application.

C. Drill fastener holes straight, true and to depth recommended by manufacturer.

D. Apply adhesive to back of unit as recommended by manufacturer.

E. Mechanically fasten to substrate. Avoid striking or damaging the unit itself during installation.

F. Apply sealant to edges in cove profile.

3.04 CLEANING PLASTIC UNITS

A. Remove protective plastic sheeting within 24 hours of installation.

B. Remove excess sealant or adhesive from joints and edges.

C. Clean four days prior to date of scheduled inspection.

3.05 PROTECTION

A. Protect installed units from traffic, subsequent construction operations or other imposed loads until concrete is fully cured.

B. Touch-up, repair or replace damaged products prior to Date of Substantial Completion.

END OF SECTION 32 1726

DIVISION 32 3113 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Chain-Link Fences: Residential.
2. Gates: **swing**.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show locations, components, materials, dimensions, sizes, weights, and finishes of components. Include plans, gate elevations, sections, details of post anchorage, attachment, bracing, and other required installation and operational clearances.

1. Gate Operator: Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions.

C. Samples:

1. Polymer-coated steel wire for fabric.
2. Polymer coating on framing and accessories.

D. Maintenance Data:

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. UL Standard: Provide gate operators that comply with UL 325.

C. Emergency Access Requirements: Comply with requirements of authorities having jurisdiction for automatic gate operators serving as a required means of access.

D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

A. General: Height indicated on Drawings Comply with ASTM A 392, CLFMI CLF 2445, and requirements indicated below:

1. Steel Wire Fabric: Metallic coated wire with a diameter of 0.192 inch

a. Mesh Size: 2 inches
b. Aluminum Coating: ASTM A 491, Type I.
c. Metallic (Zinc) Coating: ASTM A 392, Type II.
d. Zn-5-Al-MM Aluminum-Mischmetal Alloy Coating: ASTM F 1345, Type III.

2. Aluminum Wire Fabric: ASTM F 1183, with mill finish, and wire diameter of 0.192 inches.

a. Mesh Size: 2 inches

3. Selvage: Knuckled at both selvages.

2.2 RESIDENTIAL FENCE AND GATE FRAMING

A. Posts and Rails: Round

1. Fence Height: 4 feet and 6 feet
2. Duty Rating: Medium.
3. Tube or Pipe Diameter and Thickness: According to ASTM F 761.
4. Tube Size and Thickness: According to ASTM F 654.
5. Gate: Comply with ASTM F 654 and the following:

a. Type: I, single swing steel frame tubing.
b. Fabric Height: 2 inches less than adjacent fence height
c. Leaf Width: 36 inches .

6. Hardware: Latches permitting operation from both sides of gate, hinges; padlock accessible from both sides of gate.
7. Metallic-Coated Steel: Posts, rails, and frames protected with an external coating of not less than 0.6 oz. of zinc/sq. ft. (183 g of zinc/sq. m), a chromate conversion coating, and a clear, verifiable polymer film; with an internal protective coating of not less than 0.6 oz. of zinc/sq. ft. (183 g of zinc/sq. m) or 81 percent, not less than 0.3-mil- (0.0076-mm-) thick, zinc pigmented coating.

2.3 FITTINGS

A. General: Comply with ASTM F 626.

B. Finish:

1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz. /sq. ft. zinc.
2. Aluminum: Mill finish.

2.4 CAST-IN-PLACE CONCRETE

A. Materials: Portland cement complying with ASTM C 150, Type I aggregates complying with ASTM C 33, and potable water.

1. Concrete Mixes: Normal-weight concrete air entrained with not less than 3000-psi compressive strength (28 days), 3-inch slump, and 1-inch maximum size aggregate.

2.5 FENCE GROUNDING

A. Conductors: Bare, solid wire for No. 6 AWG and smaller; stranded wire for No. 4 AWG and larger.

1. Material above Finished Grade: Copper.
2. Material on or below Finished Grade: Copper.
3. Bonding Jumpers: Braided copper tape, 1 inch wide, woven of No. 30 AWG bare copper wire, terminated with copper ferrules.

B. Connectors and Grounding Rods: Comply with UL 467.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.

B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

C. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.

1. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
2. Mechanically Driven Posts: Drive into soil to depth of 30 inches . Protect post top to prevent distortion.

D. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment.

E. Line Posts: Space line posts uniformly at 10 feet maximum o.c.

F. Post Bracing and Intermediate Rails: Install according to ASTM F 567. Install braces at end and gate posts and at both sides of corner and pull posts.

G. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing.

H. Top Rail: Install according to ASTM F 567.

I. Bottom Rails: Install, spanning between posts.

J. Chain-Link Fabric: Apply fabric to [outside] [inside] of enclosing framework. Leave 1 inch between finish grade or surface and bottom selvage, unless otherwise indicated.

K. Tie Wires: Attach wire per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.

L. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.2 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.3 GROUNDING AND BONDING

A. Fence Grounding: Install at maximum intervals of 1500 feet

B. Fences within 100 Feet (30 m) of Buildings, Structures, Walkways, and Roadways: Ground at maximum intervals of 750 feet.

1. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at the grounding location.

C. Bonding Method for Gates: Connect bonding jumper between gate post and gate frame.

1. Connections: Make connections so possibility of galvanic action or electrolysis is minimized.

D. Bonding to Lightning Protection System: If fence terminates at lightning-protected building or structure, ground the fence and bond the fence grounding conductor to lightning protection down conductor or lightning protection grounding conductor complying with NFPA 780.

3.4 FIELD QUALITY CONTROL

A. Grounding-Resistance Testing: Engage a qualified independent testing agency to perform field quality-control testing.

END OF DIVISION 32 3113

PART I - GENERAL

1.1 WORK INCLUDED IN THIS SECTION: The Contractor shall furnish all plant, labor, and materials and perform all operations in connection with the placing, watering, and firming of sodded and seeded areas, complete and in strict accordance with these specifications and applicable drawings, and subject to the terms and conditions of the Contract. The Contractor shall sod disturbed areas where shown on the Drawings. All other areas disturbed for any reason during construction (and not shown to be sodded) shall be seeded.

1.2 RELATED WORK IN OTHER SECTIONS: (See Table of Contents for Division Numbers)

Demolition, Clearing and Grubbing.....	Section 2100
Excavating, Filling and Grading.....	Section 2200

1.3 QUALITY ASSURANCE:

A. Qualifications of Workmen: Provide at least one person who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of materials being installed and the best methods for their installation and who shall direct all work performed under this Section.

1.4 SUBMITTALS: All certificates required by law shall accompany shipments. Upon completion of the installation, deliver all certificates to the Owner's Representative.

1.5 PRODUCT HANDLING:

A. Replacement: In the event of damage or rejection, immediately make all repairs and replacements necessary to the approval of the Owner and Engineer and at no additional cost to the Owner.

PART 2 - MATERIALS

2.1 TOPSOIL: Topsoil from the project site shall be used for all planting operations. All topsoil shall be to the satisfaction and approval of the Owner's Representative.

2.2 SOD: All grass sod shall be nursery grown native blue grass, zoysia, or fescue as necessary to match existing yard and free of objectionable grassy and broad leaf weeds. Sod shall be considered free of such weeds if less than 5 such plants are found per 100 sq. ft. of area. Sod will not be acceptable if it contains any of the following weeds: common bermuda grass (wiregrass), quackgrass, johnson grass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, and bromegrass. The sod shall be uniform thickness of 3/4" (±¼") and shall be mowed to a height of 2" to 2½" prior to stripping.

2.3 SEED: Seed shall be labeled in accordance with U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act. All seed shall be furnished in sealed standard containers unless exception is granted in writing by the Owner's Representative. Seed which has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable. The minimum percentage by weight of pure live seed in each lot of seed shall be as follows:

Kind of Seed		Percentage
Blue Grass, Kentucky (Poa. Pratensis)		50
Alta Fescus (Festuca Elatior arundances var alta)		20
Red Top (Agrestis alba)		5
Rye Grass, Domestic (Lolium jultiflorum and perene)	20	
Total Grass Seed		95
Material Other Than Grass Seed*		5
TOTAL	100	

(*) The aggregate percent of material other than grass seed as above stated shall include all non-viable seed, chaff, bulbs, live seed of crop plants other than those specified above, harmless inert matter and weed seed not exceeding 1 per cent by weight of pure live seed and other material in the mixture.

2.4 COMMERCIAL FERTILIZER:

A. Shall be composed of a formula 12-12-12 and shall conform to the applicable State fertilizer laws. It shall be uniform in composition, dry and free flowing and shall be delivered to the site in the original unopened containers each bearing the manufacturer's guaranteed analysis. Any fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted.

B. Agricultural limestone shall be finely ground limestone rock containing a miminum of a combined total of "calcuim and magnesium carbonate equivalent" of from 85% to 90%. All the material shall pass a 3/16" screen, approximately 90% shall pass a #8 screen and approximately 15-20% shall pass a #100 screen.

2.5 MULCHING:

A. All seeded areas shall be mulched with mulch materials as specified hereinbefore or with clean dry straw and other binding materials subject to the approval of the Owner's Representative.

B. Hydro-Mulch: Mulch snall be a natural wood cellulose fiber processed so that it does not contain germination inhibiting factors and shall be dyed green. The fibers shall be capable of remaining in uniform suspension in water under agitation and of blending with grass seed and fertilizer to form a homogeneous slurry.

1. General: This Contractor has the option to hydro-mulch any or all of the areas to be seeded. Prior to carrying out this planting procedure, the Contractor shall submit in writing all materials, quantities, and equipment to be used for hydro-mulching to the Engineer for approval.

2. Application: When applied to the ground surface by hydraulic means, the mulch shall be capable of forming a strong moisture holding mat uniformly impregnated with seed; and which after application, will allow absorption of moisture and allow irrigation and rainfall to percolate to the underlying soil. Suppliers shall certify that their product meets the above requirement based on testing.

3. Weight Specifications of this material shall refer only to air dry weight of fiber material. Absolute air dry weight is based on normal standards of the Technical Association of Pulp and Paper Industry for wood cellulose and is considered equivalent to 10% moisture. Containers shall show air dry weight content marked by manufacturer.

2.6 WATER: Water used, hose, and other watering equipment required for the work shall be furnished by the Contractor.

PART 3 - INSTALLATION

3.1 JOB CONDITIONS:

A. Areas to be seeded or sodded includes all project areas disturbed by excavation, grading, and other construction procedures required for the completion of this Contract.

B. Sodding and seeding shall be performed only during the seasons when satisfactory growing conditions exist. The planting operation shall not be performed during times of drought or other unfavorable climatic conditions. Time of planting shall be approved by the Engineer.

C. Prior to the work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

D. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 PREPARATION FOR PLANTING: The areas to be sodded or seeded shall be prepared immediately prior to the placing of the sod or seed by thorough cultivating, smoothing, removal of clods, surface stone 1-inch diameter or larger, and weeds. Soil shall be in a moist condition prior to placing sod.

Grades on the areas to be sodded or seeded shall be maintained in true, even, and compacted conditions so as to prevent the formations of depressions. Areas that have washed or eroded shall be brought to grade and compacted thoroughly by the Contractor at his own expense prior to placing the sod or seeding. No grading shall be done when the soil is in a muddy or frozen condition.

Sod placed on slopes steeper than 2 1/2:1 shall be staked with 6 stakes per square yard or roll of sod.

3.3 APPLYING FERTILIZER: The previously described fertilizer shall be applied to the finished grade by approved spreader at the rate of 7.5 lbs. per 1000 square feet and shall be thoroughly raked into the top 2 inches of the surface before planting of seed. Spread ground limestone over all areas to be seeded at the rate of 50 lbs. per 1000 square feet, at least 2 days before spreading the inorganic fertilizer. Lime and fertilizer shall be uniformly incorporated into the soil to a depth of 1 inch by raking, harrowing or other approved method.

3.4 PLANTING SEED: Seed mixed in proportions as hereinbefore specified shall be broadcast by approved sowing equipment at the rate of 400 lbs. per acre. The seed shall be uniformly distributed over the designated areas. The seed shall be covered to an average depth of 1/2 inch by means of a brush harrow, spike-tooth harrow, chain harrow, cultipacker, or other approved device.

When delays in operations carry the work beyond the most favorable planting season for the grasses designated, or when conditions are such, by reason of drought, high winds, excessive moisture, or other factors, that satisfactory results are not likely to be obtained, the seeding operation shall be stopped and work shall be resumed only when conditions are favorable again or when approved alternate or corrective measures and procedures have been put into effect. If inspection during seeding operations or after there is a show of green indicates that areas have been skipped, the sowing of additional seed on these areas will be required.

The seeded areas will be inspected for acceptable grass coverage and will be acceptable when the grasses designated are growing and are In good condition, and no area more than 1/2 of one per

cent of the total area shall be bare, of which no single area shall be more than 3 sq. ft. in area. Any area larger than this will be not acceptable and shall be reseeded.

3.5 MULCHING:

A. All seeded areas shall be mulched at the rate of two tons per acre with clean dry straw and other binding materials and procedures specified hereinbefore.

B. All seeded areas optioned by the Contractor to be hydro-mulched shall be mulched at the following rates:

1. Slopes less than 4:1 = 2000 lbs. per acre

2. Slopes greater than 4:1 = 2500 lbs. per acre

3.6 LAYING OF SOD: Sod shall be laid so that no voids occur between strips and shall be immediately tamped or rolled. The sod shall then be thoroughly watered. The finished sodded surface shall be true to grade, smooth, even and equally firm at all points. Sod will be accepted after it shows definite growth and establishment. Areas of three square feet or more that do not show these signs shall be re-sodded by the Contractor, and those areas shall be in growing condition before acceptance will be made.

3.7 MAINTENANCE: All sodded and seeded areas shall be kept in a healthy, growing condition by watering, weeding, mowing, rolling, trimming, edging, etc., upon completion and acceptance by the Owner.

END OF DIVISION 32 9219

DIVISION 33 3113 – FACILITY SANITARY SEWERS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Perform excavating and backfilling required for work of this Section.
   2. Furnish and install sanitary sewage system as described in Contract Documents beginning at 5 feet from where it enters building and connecting to serving sewer system.

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM A 74-98, 'Standard Specification for Cast Iron Soil Pipe and Fittings'
   2. ASTM C 564-97, 'Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings'
   3. ASTM D 2235-96a, 'Standard Specification for Solvent Cement for Acrylonitrille-Butadiene-Styrene (ABS) Plastic Pipe and Fittings'
   4. ASTM D 2321-00, 'Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications'
   5. ASTM D 2564-96a, 'Standard Specification for Solvent Cements for Poly (Vinyl Chloride)(PVC) Plastic Piping Systems'
   6. ASTM D 2661-97a, 'Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings'
   7. ASTM D 2665-00, 'Standard Specification for Poly (Vinyl Chloride)(PVC) Plastic Drain, Waste, and Vent Pipe Fittings'
   8. ASTM D 3034-00, 'Standard Specification for Type PSM Poly Vinyl Chloride)(PVC) Sewer Pipe and Fittings'
   9. ASTM F 656-96a, 'Standard Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride)(PVC) Plastic Pipe and Fittings'
   10. ASTM F 789-95a, 'Standard Specification for Type PSM Poly (Vinyl Chloride)(PVC) Plastic Gravity Flow Sewer Pipe and Fittings'

1.3 QUALITY ASSURANCE

A. Regulatory Requirements - Install sanitary sewers, cleanouts and appurtenances in accordance with the City of Herculaneum and the Dept. of Natural Resources requirements.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Cast Iron Soil Pipe And Fittings
   1. Meet requirements of ASTM A 74, Service Grade.
      a. Cast iron for bell and spigot fittings
      b. Cast iron for no-hub joints.
   2. Approved Joint Material And Manufacturers -
      a. For Bell And Spigot Pipe - Rubber gaskets meeting requirements of ASTM C 564 and compatible with pipe used.
      b. For No-Hub Pipe -
         1) Approved Products -
            a) Neoprene gaskets with type 304 stainless steel clamp and 24 ga type 304 stainless steel housing by Clamp-All Corp, Haverhill, MA (800) 762-7255 or (978) 372-9010 www.clampall.com
            b) SuperGrip 304 by AB&I - American Brass & Iron, Oakland, CA (800) 468-4766 or (510) 632-3467 www.abifoundry,com

c) Husky SD 4000 coupling by ANACO, Anaheim, CA (707) 259-0602
d) MG Coupling by MG Piping Products Co, Stanton, CA (800) 761-8055 or (714) 761-8055 www.mgcoupling.com

B. ABS Schedule 40 solid wall plastic pipe and fittings meeting requirements of ASTM D 2661 joined with pipe cement meeting requirements of ASTM 2235.

C. PVC Schedule 40 solid wall plastic pipe and fittings meeting requirements of ASTM D 2665 joined using cement primer meeting requirements of ASTM F 656 and pipe cement meeting requirements of ASTM D 2564.

2.2 MANUFACTURERS

A. Ipex Inc, Englewood, CO (866) 473-9462 www.ipexinc.com

PART 3 EXECUTION

3.1 EXAMINATION

A. Before installation, inspect pipe for defects and cracks. Do not use defective, damaged, or unsound pipe.

3.2 PREPARATION

A. Excavate and backfill as specified in Section 02315 with following additional requirements
1. Runs shall be as close as possible to those shown on Drawings.
2. Excavate to required depth and grade to obtain fall required.
3. Bottom of trenches shall be hard. Tamp as required.
4. Remove debris from trench prior to laying of pipe.
5. Do not cut trenches near footings without consulting Architect.
6. Excavate trenches so outside pipe will be 12 inches minimum below frost line or 18 inches minimum below finish grade, whichever is deeper.

3.3 INSTALLATION

A. General
1. When work is not in progress, close open ends of pipe and fittings so no trench water, soil, or other substances will enter pipes or fittings.
2. Keep trenches free from water until pipe jointing material has set. Do not lay pipe when condition of trench or weather is unsuitable for such work.
3. Trench width at top of pipe -
a. Minimum - 18 inches or diameter of pipe plus one foot, whichever is greater.
b. Maximum - Outside diameter of pipe plus two feet.

B. Placing And Laying of Underground Pipe
1. Deflections from straight line or grade, as required by vertical curves, horizontal curves, or offsets, shall not exceed 6/D inches per linear foot of pipe where D represents nominal diameter of pipe expressed in inches
2. Deflections to be determined between center lines extended of two connecting pipes.
3. If alignment requires deflection in excess of these limitations, provide special bends or sufficient number of shorter lengths of pipe to provide angular deflections within limits approved by Architect.
4. Laying -
a. Pipe laying shall proceed up-grade with spigot ends of bell-and-spigot pipe pointing in direction of flow.
b. Lay each pipe true to line and grade and in such manner as to form close concentric joint with adjoining pipe and to prevent sudden offsets of flow line.

c. As work progresses, clear interior of pipe of dirt and superfluous materials. Where cleaning after laying is difficult because of small pipe, keep suitable swab or drag in pipe and pull forward past each joint immediately after jointing has been completed.

5. Make joints between cast iron pipe and other types of pipe with standard manufactured cast-iron adapters and fittings.
6. Valve, plug, or cap, as directed by Architect, where pipe ends are left for future connections.

B. Cast Iron Pipe And Fittings
1. Shape trench bottom to give substantially uniform circumferential support to lower third of each pipe. Provide depression under bell of each joint to maintain even bearing of sewer pipe.
2. Connect to street main as required by local authorities.
3. Use jacks to make-up gasketed joints.

C. Thermoplastic Pipe And Fittings
1. Install in accordance with Manufacturer's recommendations and ASTM D 2321.
2 Stabilize unstable trench bottoms.
3. Bed pipe true to line and grade with continuous support from firm base.
   a. Bedding depth - 4 to 6 inches.
   b. Material and compaction to meet ASTM standard noted above.
4. Excavate bell holes into bedding material so pipe is uniformly supported along its entire length. Blocking to grade pipe is forbidden.
6. Piping and joints shall be clean and installed according to Manufacturer's recommendations. Break down contaminated joints, clean seats and gaskets and reinstall.
7. Do not use back hoe or power equipment to assemble pipe.
8. Initial backfill shall be 12 inches above top of pipe with material specified in referenced ASTM standard.
9. Minimum cover over top of pipe -
   a. 36 inches before allowing vehicular traffic over pipe
   b. 48 inches before use of compaction equipment other than hand or impact tampers.

3.4 FIELD QUALITY CONTROL

A. Failure to install joints properly shall be cause for rejection and replacement of piping system.

END OF DIVISION

DIVISION 33 4211

STORM DRAINAGE

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Perform excavating and backfilling required for work of this Section.
   2. Furnish and install storm drainage system as described in Contract Documents from point of water collection to terminating point.

B. Related Sections (See Table of Contents for Division Numbers)
   1. Section 02051 - General Site Construction Requirements
   2. Section 02315 - Procedure and quality of excavating, backfilling, and compacting

1.2 REFERENCES

A. American Association Of State Highway And Transportation Officials
   1. AASHTO M-252, 4 to 10 inch pipe, 'Specifications for Corrugated Polyethylene Pipe'
   2. AASHTO M-294, 12 to 48 inch pipe, 'Specifications for Corrugated Polyethylene Pipe'

B. American Society For Testing And Materials
   1. ASTM A 74-98, 'Standard Specification for Cast Iron Soil Pipe and Fittings'
   2. ASTM A 536-84 (99), ‘ Standard Specification for Ductile Iron Castings’
   3. ASTM A 929-97, 'Standard Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe.
   3. ASTM C 14-99, 'Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe'
   4. ASTM C 76-00, 'Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe'
   5. ASTM C 564-97, 'Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings'
   6. ASTM D 2321-00, 'Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications'
   7. ASTM D 3034-00, 'Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings'
   9. ASTM D 3212-96a, ‘Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals’
   10. ASTM F 794-99, ‘Standard Specification for Poly(Vinyl Chloride)(PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter’
   11. ASTM F 1336-00, ‘Standard Specification for Poly(Vinyl Chloride)(PVC) Gasketed Sewer Fittings’

PART 2 PRODUCTS

2.1 MATERIAL

A. Bedding Material - 3/8 inch crushed gravel.

2.2 COMPONENTS

A. Catch Basins, Curb Inlets, Etc
   1. Concrete -
      a. Construct of 4000 psi minimum concrete.
      b. Include cover inlet with cast iron frame and grate as shown on Drawings.
   2. PVC -
      a. Comply with requirements of ASTM D 3212. ASTM F 794, and ASTM F 1336.

b. Metal grates, Frames, and hoods shall comply with ASTM A 536, Grade 70-50-05.
c. Acceptable Products -
1) Nyloplast-ADS, Buford, GA (866) 888-8479 www.nyloplast-us.com
2) Equal as approved by Architect before bidding. See Section 01600.

B. Concrete Pipe
1. Non-Reinforced - Meet requirements of ASTM C 14.
2. Reinforced -
a. Meet requirements of ASTM C 76, plain end.
b. Determine class of pipe by depth of cover over pipe at rough-graded elevations as follows -

Depth Of Cover	Class Of Pipe
Under 2 feet	V
2 feet to 3 feet	IV
3 feet to 6 feet	III
Over 6 feet	II

C. PVC Pipe And Fittings
1. Meet requirements of ASTM D 3034, SDR 35
2. Fittings - Slip Joint type with elastomeric seals.

D. Corrugated Polyethylene Pipe And Fittings
1. Meet requirements of AASHTO M-252 or M-294, Type S.
a. Corrugated, helical or annular, exterior with smooth interior and gasketed connectors.
b. Corrugated, annular, with silt and water tight joints for storm sewers.

E. Corrugated Metal Pipe
1. Meet requirements of ASTM A 929.
2. 16 gauge, standard round, galvanized with 2 ounces zinc per square foot sheet steel.
3. Corrugations -
a. 6 to 10 Inch Pipe - 1-1/2 by 1/4 inch depth helical corrugations.
b. 12 to 60 Inch Pipe - 2-2/3 by 1/2 inch depth helical corrugations.

F. Cast Iron Soil Pipe And Fittings
1. Meet requirements of ASTM A 74.
2. Joint Material - Rubber gaskets meeting requirements of ASTM C 564 and compatible with pipe used.

PART 3 EXECUTION

3.1 PREPARATION

A. Excavate and backfill as specified in Section 02315 with following additional requirements
1. Runs shall be as close as possible to those shown on Drawings.
2. Excavate to required depth.
3. Grade to obtain fall required.
4. Remove debris from trench prior to laying of bedding and pipe.
5. Do not cut trenches near footings without consulting Architect.
6. Backfill only after pipe lines have been tested, inspected, and approved by Architect.

3.2 INSTALLATION

A. Concrete Pipe
1. Provide 3 inches of uncompacted bedding material below pipe.
2. After installation of pipe, provide additional bedding material up to springline of pipe.

B. PVC / Polyethylene Pipe
1. Install in accordance with ASTM D 2321.

2. Minimum cover for corrugated polyethylene pipe and fittings shall be 12 inches for H-20 load.

C. Use jacks to make-up gasketed joints.

3.3 FIELD QUALITY CONTROL

A. Failure to install joints properly shall be cause for rejection and replacement of piping system.

3.4 CLEANING

A. Remove excess earth from site or place as directed by Architect.

END OF SECTION

Maag geotechnical services

December 20, 2019

Mr. Steve Bacon
Bacon Commercial Design LLC
PO Box 605
Crystal City, MO 63019

Re: Jefferson County Animal Care Facility
4848 State Route 30
House Springs, Missouri

Dear Mr. Bacon,

Enclosed is one (1) copy of the Exploration of Subsurface Conditions and Foundation Recommendations report for the above referenced project and a summary letter for your use. Please let us know if you need additional copies of this report or if you have any questions.

We have appreciated the opportunity to be of service to you on this phase of the project. If we may be of any assistance during construction with additional engineering or materials testing services, we would be happy to work with you.

Sincerely,

MAAG GEOTECHNICAL SERVICES, INC.

Marlene D. Maag

Marlene D. Maag, P.E.

MDM:jyc
Jeff. Co. Animal Care Subsurf cvr

Enclosure

Email: SJBacon@BCD-LLC.com; DVonarxEngineering.com

EXPLORATION OF SUBSURFACE CONDITIONS
AND
FOUNDATION RECOMMENDATIONS

JEFFERSON COUNTY ANIMAL CARE FACILITY
HOUSE SPRINGS, MISSOURI

BACON COMMERCIAL DESIGN LLC
DECEMBER 2019

Maag geotechnical services

PO BOX 29182
ST. LOUIS, MO 63126
314-337-0750

Maag geotechnical services

December 20, 2019

Mr. Steve Bacon
Bacon Commercial Design LLC
PO Box 605
Crystal City, MO 63019

Re: Jefferson County Animal Care Facility
4848 State Route 30
House Springs, Missouri

Dear Mr. Bacon:

MAAG GEOTECHNICAL SERVICES, INC. is pleased to have prepared this report entitled *Exploration of Subsurface Conditions and Foundation Recommendations* for the above-referenced project. The report should be read in its entirety. The primary excerpts from the report include the following:

- Shallow dolomite bedrock was encountered in all of the test holes at depths of 2 inches to 4.5 feet below the ground surface. We recommend a bearing pressure of 5,000 pounds per square foot (psf) be used for design of the shallow footing system assuming the footings will bear on bedrock. This will require a thicker footing in the southern portion of the structure.

- Assuming the footings are placed on solid bedrock, the depth of the northern portion of the footing may be less than the required 30 inches depth for frost protection. Otherwise, chipping of the bedrock will be required to reach the frost depth for the footings.

- The seismic design category for this project is "B".

We have appreciated the opportunity to be of service to you on this phase of the project. If we may be of any assistance during construction or with additional engineering, environmental assessments, asbestos assessments, or materials testing services, we would be happy to work with you.

Very truly yours,

MAAG GEOTECHNICAL SERVICES, INC.

Marlene D. Maag

Marlene D. Maag, P.E.
MDM:jyc
Jeff Co Animal Care Subsurf1

EXPLORATION OF SUBSURFACE CONDITIONS

AND

FOUNDATION RECOMMENDATIONS

JEFFERSON COUNTY ANIMAL CARE FACILITY HOUSE SPRINGS, MISSOURI

At the request of Bacon Commercial Design LLC, we have conducted an exploration of the subsurface conditions for the proposed Jefferson County Animal Care Facility. The site is located at 4848 State Route 30 in House Springs, Missouri. The building addition layout is shown on Figure 1.

The purpose of this exploration was to obtain subsurface information upon which to base grading, foundation and pavement recommendations for the proposed addition.

PROPOSED CONSTRUCTION

The proposed addition will be a slab-on-grade structure extending from the existing building on the site. The addition will be approximately 30 ft by 50 ft and located at the southwest end of the existing building. Additional parking or drives around the facility may be needed.

FIELD WORK

Three test holes (B1-B3) were drilled, plus two attempts in the area of B3 on this site at the locations shown on Figure 1. The test holes were located with respect to existing on-site features. If accurate locations and elevations are required, they should be provided by the site surveyor. The test holes were advanced using a 3.25-inch-diameter, hollow-flight, truck-mounted auger. Standard penetration tests were made at

2.5-ft intervals in the upper 10 ft of drilling and at 5-ft intervals for the remaining depth of the test holes. Representative specimens of the soils encountered were obtained at relatively small vertical intervals for routine identification and possible laboratory testing. The test holes were terminated upon encountering auger refusal on the underlying bedrock or boulders.

Boring logs showing the nature and thicknesses of the various soils encountered, the results of the standard penetration tests, the groundwater conditions encountered at the time of drilling, and the depths of auger refusal are shown on Figures 2-1 through 2-3.

LABORATORY WORK

The soil samples were visually examined and classified by a geological engineer. Based upon the results of the classifications and field work, no other laboratory work was performed.

GENERAL CONSIDERATIONS AND RECOMMENDATIONS

SITE DESCRIPTION

The area of the proposed addition is fairly level and is southwest of the existing building on the property. A rock cut approximately 24 feet in height is present to the southeast of the proposed construction and the site drops off at an approximately 3 Horizontal to 1 Vertical (3:1) slope southwest toward State Route 30.

SUBSURFACE CONDITIONS

Crushed rock fill was encountered in the Boring 2 (B2) at the south corner of the proposed building to a depth of 4.5 feet where bedrock was encountered. Boring 1 (B1) encountered refusal at a depth of 2 feet on bedrock and B3 encountered bedrock within 2 inches of the existing ground surface. Boring 3 was offset and redrilled 2 feet west and again 5 feet east of the original boring and encountered the same refusal depth.

Groundwater was not encountered in the exploration at the time of excavation. It should be noted that the groundwater elevation is subject to seasonal and climatic variations and may be present at a different elevation at a future date. However, we do not anticipate any groundwater problems during development of the site.

Difficult drilling and auger refusal experienced in the rocky soils indicate boulders or solid bedrock with thin weathered ledges of rock. We expect some of these materials may be excavated during the general grading and foundation excavation but may not be easily excavated in sewer trenches without chipping. We recommend a contingency fund be established for rock excavation.

GEOLOGIC SETTING

The subject property is located in House Springs, Missouri. The bedrock geology in the area is described as part of the Jefferson City and Cotter dolomite formations, which is an Ordovician age sedimentary unit consisting of upper layers of weathered dolomite ranging from 2 inches to 10 feet in thickness underlain with thicker beds. No indications of slope movement was observed.

SEISMIC SOIL SITE CLASS

For seismic considerations, the Site Class for this project qualifies under Site Class B as discussed in Section 1613.3.2 of the 2012 International Building Code (IBC).

GRADING

Grading plans were not available at the time of this report. We anticipate that minor grading will be required on this site. We anticipate the majority of the grading will be to level out the building area and additional drive or parking areas as needed. When the grading plans are finalized, they should be reviewed by **MAAG GEOTECHNICAL SERVICES, INC.**

Any existing structures which are to be demolished; and the debris, along with any existing foundations and floor slabs, should be disposed of as directed by the geotechnical engineer. All existing fill within the building area should be overexcavated down to competent bedrock. All areas to receive fill should be proofrolled to at least 90 percent of the maximum density obtained from the Modified Proctor Compaction Test (ASTM D 1557). The site preparation should be observed by **MAAG GEOTECHNICAL SERVICES, INC.** to verify that the above recommendations are carried out.

The areas to be filled should be proofrolled to at least 90 percent of the maximum density as determined from the Modified Proctor Compaction Test (ASTM D 1557). Any soft areas encountered during proofrolling should be undercut and replaced with a properly compacted fill. All fill used on the site should consist of low plasticity soil, for example, a soil with a liquid limit less than 50. The highly plastic clays encountered on the site are not suitable for use as fill below pavements, building areas, or for slope construction. Clays with sufficient quantities of rock fragments may be acceptable if approved by a representative of **GEOTEST, INC.** The silty clays and clayey silts should be suitable for use as fill. Any fill trucked onto the site should be approved by a qualified soil technician prior to leaving the borrow area.

Any soil fill should be placed in loose lifts no thicker than 8 inches and compacted to at least 90 percent of the maximum density as determined from the Modified Proctor

Compaction Test (ASTM D 1557). The compaction of the fill should be tested during placement by a qualified soil technician to determine if proper densification of the fill is taking place. At the completion of the grading operation, the building area and all areas to be paved should be proofrolled to at least 90 percent of the above specification.

All fill used on the site may consist of the existing rocky material excavated from the footing areas. All fill shall be placed in loose lifts no thicker than 8 to 12 inches and compacted to at least 90 percent of the maximum density obtained from the Modified Proctor Compaction Test (ASTM D 1557). At the completion of the grading, the building area and areas to be paved should be proofrolled to at least 90 percent of the above specifications. The placement and compaction of the fill should be observed and tested by **MAAG GEOTECHNICAL SERVICES, INC.** to verify compliance with the above recommendations.

Rock fill encountered in B2 should be suitable as fill material in other locations such as the surrounding drive area. Rock placed beneath the drives and other settlement-sensitive areas should have a maximum size of 12 inches, and rocks in a clay binder should have a maximum size of 8 inches.

Ripped rock containing little or no fines should be placed in loose horizontal lifts no thicker than 12 inches. Ripping may result in some rocks that are larger than a maximum dimension of 12 inches. These boulders should be broken by mechanical means, such that their maximum dimension is 12 inches, or the boulders should be disposed of in areas that will not support the building or other settlement-sensitive construction. An experienced soil technician should monitor the placement of all shot rock for compliance with these recommendations.

Each lift should be compacted with at least five passes of a 10-tn vibratory roller. Fill placement and compaction should be conducted under the observation of an experienced soil technician. Acceptance of each lift should be based on the number of roller passes and the performance of the fill. The surface of the final lifts should be observed after compaction to determine if the foundation or pavement may be placed without a filter fabric or without the placement of selected granular material to infill or "choke off" surface voids.

For fill placed in compliance with the above specifications, there should be little or no settlement within the fill; but there may be some minor settlement in the soils beneath the fill. However, this settlement will be of a uniform nature and should neither cause any noticeable movement at the surface of the fill nor be detrimental to any of the utilities servicing the development. The major portion of the settlement, which should be very minor, will take place during the grading operation and prior to construction.

EROSION CONTROL

The shallow soils on this site are relatively silty and highly susceptible to erosion. Erosion-control measures are necessary to prevent the soils from being carried from the property. Erosion-control measures should meet the specifications of the local jurisdiction and the Missouri Department of Natural Resources (MDNR). Typical

erosion-control measures include staked straw bales or silt fences that must be properly constructed and maintained throughout the project development.

FOUNDATIONS

We recommend spread footings as the most suitable foundation type for the support of the building provided the site is graded in accordance with these grading recommendations. Spread footings whose bases are in properly compacted fill may be designed for a net allowable soil bearing pressure of 2,000 pounds per square foot (psf). The base of footings subject to frost should be a minimum of 30 inches below grade. Spread footings whose bases are in solid bedrock may be designed for a net allowable soil bearing pressure of 5,000 psf.

It is our understanding the footings for the proposed addition will be constructed at a location beyond the existing building to minimize the overlapping of the footing pressures below the proposed and existing footings.

ROCK

It is possible that the foundation excavation may be partially in bedrock and partially in rocky fill. Where this occurs, we recommend that the foundation in the area of the fill material be overdeepened so that all bearing surfaces rest on the underlying bedrock. This could be done by overexcavating the footing trenches using a backhoe or by the use of drilled piers. Piers end-bearing on the underlying bedrock may be designed at an allowable end-bearing pressure of 10,000 pounds per square foot (psf).

FLOOR SLABS

The following recommendations should be taken as minimum requirements not to supersede the structural engineering design of the floor slabs. A coefficient of subgrade modulus, k, of 150 pounds per cubic inch (pci) can be used for slabs resting on undisturbed virgin soil or properly compacted fill.

The floor slabs should be supported on a layer of crushed stone. This will help to distribute concentrated loads and equalize moisture conditions beneath the slabs. The floor slabs should not be structurally connected to the foundation walls and column

footings. Isolation joints should be used at any place where a slab meets a wall or an independent column support. We also recommend that joints be placed in the floor slabs at no more than 12-ft intervals and located in such a manner that each floor slab section is rectangular. Such joints permit slight movements of the independent elements and help reduce random cracking that might otherwise be caused by restraint of shrinkage, slight rotations, heave, or settlement.

It is desirable to place a polyethylene moisture barrier beneath the floor slab to prevent the transfer of capillary moisture to the slabs. Without careful attention to curing of the concrete slab, however, the polyethylene sheet can cause excessive shrinkage cracking and "curling". We suggest the applicable recommendations provided in the American Concrete Institute (ACI) Standards be followed for curing the concrete floor slab.

SETTLEMENT

Assuming the building rests upon footings designed to bear on bedrock at a net allowable soil bearing pressure of 5,000 pounds per square foot (psf) or less, the total settlement of any foundation element should be less than 1 inch and differential settlement across the proposed building area should be less than ½ inch. It should be noted that an extensive settlement analysis, which typically involves consolidation testing, was not in the scope of this work; therefore, these values are based upon experience with similar loads and soil conditions.

DRAINAGE

The success of foundations and slab floor systems is contingent upon keeping the subgrade materials at a more or less constant moisture content and by not allowing surface drainage a path to the subsurface. Positive surface drainage away from the structure must be maintained at all times. Landscaped areas should be designed and built such that irrigation and other surface water will be collected and carried away from foundation elements.

The ground surface surrounding the exterior of the building and any overlying concrete slabs or sidewalks should have positive slope away from foundation walls on all sides. We recommend a minimum slope of 6 inches in the first 10 ft; however, the slope can be decreased to 3 inches in 10 ft if the ground surface adjacent to foundations is covered with concrete slabs, sidewalks, or asphalt paving.

TRENCH BRACING

It is mandatory that all excavations – including footing excavations, utility trenches, or any other trench in accordance with Occupational Safety and Health Administration (OSHA) definitions – be properly braced. All bracing should be constructed in accordance with OSHA guidelines.

SANITARY SEWER LATERALS

We recommend the soil backfill below and around the sanitary sewer laterals exiting the buildings be hand tamped, especially below the footing and floor slab. Flowable fill or clean crushed limestone can also be considered for constructability reasons.

PARKING AND PAVED AREAS

Prior to placement of the pavement section, all areas to be paved should be field tested with a truck loaded to at least 30,000 pounds. The field test should be observed by a qualified geotechnical engineer. Any soft areas encountered during the field test should be undercut and replaced with a properly compacted fill. After approval of the earth subgrade, no water should be allowed to saturate the surface prior to placement of the crushed rock base course.

In areas subject to light automobile traffic, we recommend a pavement section consisting of 6 inches of crushed rock with a 2-inch asphaltic concrete wearing surface. In areas subject to heavy automobile or truck traffic, we recommend a pavement section consisting of 8 inches of crushed rock and a 3-inch asphaltic concrete wearing surface. The crushed rock base course should be compacted to a density of at least 90 percent of the maximum density as determined from the Modified Proctor Compaction Test (ASTM D 1557) and receive a prime coat. We recommend the drainage structures around the paved areas have weep holes covered with filtration fabric to allow drainage of the base course. The materials used and the method of placement should conform to the specifications of the **Missouri** Department of Highways & Traffic. The installation of the paved areas should be tested at the time of placement to verify compliance with the design and the specifications. We recommend that approval of the base course be required before placement of the wearing surface.

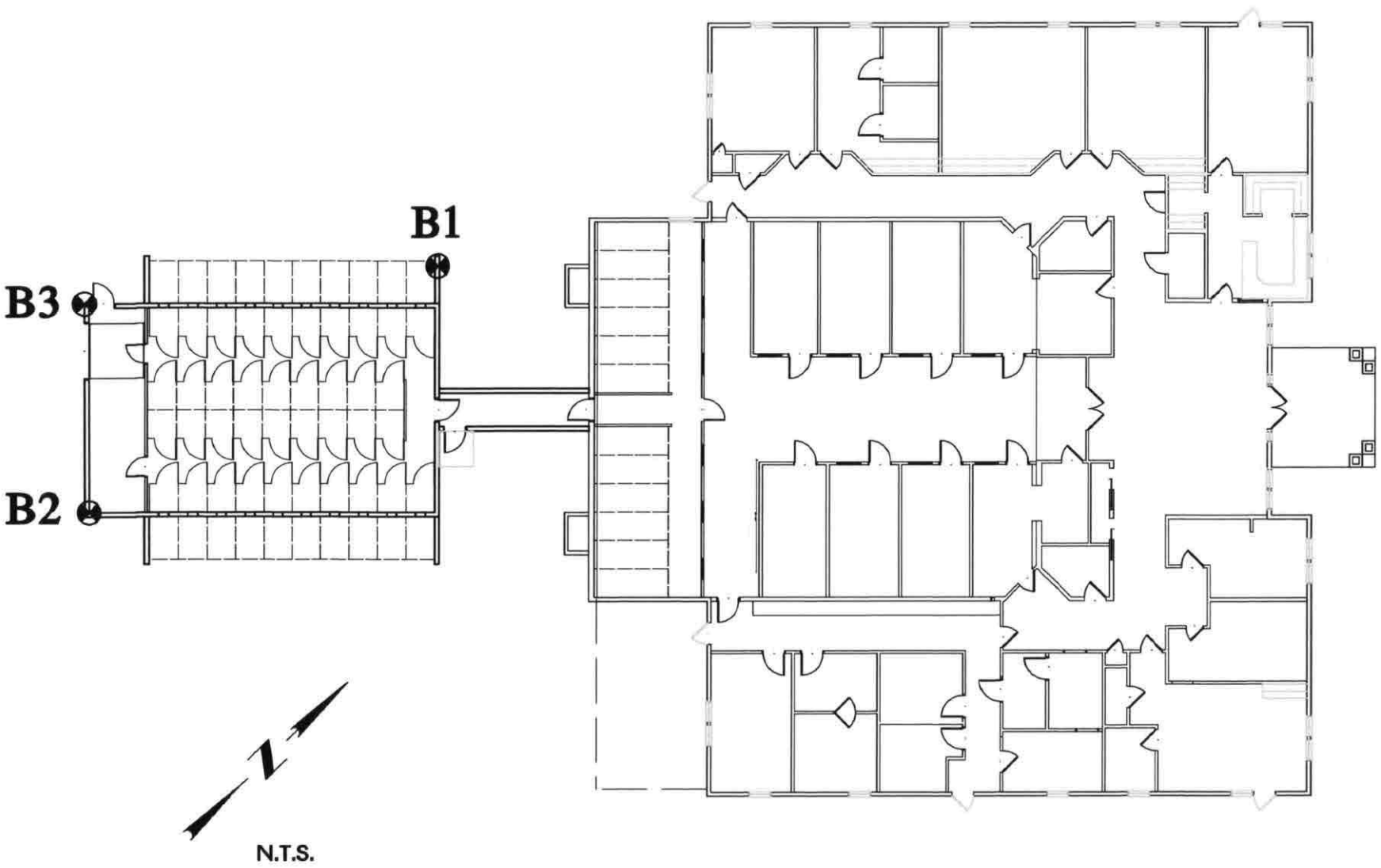
In loading and trash-handling areas, we recommend the use of an 8-inch-thick concrete slab reinforced with 6x6, 6/6 welded wire fabric placed 2 inches below the finish surfaces to support the trucks since these areas are the most susceptible to damage due to the trash-handling operations and the turning movements of the trucks. The concrete should have a 28-day compressive strength of 4,000 pounds per square inch (psi) and should consist of Portland Cement, Type 1.

LIMITATIONS OF THE REPORT

We recommend we review those portions of the plans and specifications that pertain to earthwork, foundations, and pavements to confirm they are consistent with our recommendations.

The recommendations in this report are based on widely spaced explorations and presume the construction and engineering observations will be completed as recommended in the report. Conditions may vary from those encountered in the explorations or can change due to construction activities or weather conditions. Therefore, **MAAG GEOTECHNICAL SERVICES, INC.** must be involved during the construction phase of this project to determine that the subsurface conditions are as anticipated from the subsurface data and that our recommendations relative to the construction are implemented. **MAAG GEOTECHNICAL SERVICES, INC.** will make the recommended tests and field observations provided these services are authorized. It is the developer's and/or contractor's responsibility to notify **MAAG GEOTECHNICAL SERVICES, INC.** sufficiently in advance so these observations can be made at the proper time.

This report was prepared for the exclusive use of the owner, architect, and engineer for design of the proposed development. It should be made available to the contractor as information-of-factual-data only and not as a warranty of subsurface conditions interpreted from the logs presented or as generalized in this report.



Jefferson County Animal Care Facility		PO Box 29182 St. Louis, MO 63126
Site Plan		314-337-0750
Date	20-Dec-19	www.Maag-Geo.com
Reviewed By	MDM	DBE/WBE Certified

Figure 1

LEGEND

Symbol	Description

trata symbols

Silty gravel (GM)

Description not given for:
"](("

Gravel

Misc. Symbols

Water table during exploration

Water table at boring completion

Sample Description

SS	Split spoon
ST	Shelby tube
DT	Drive Tube
H	Bag Sample
WH	Weight of split spoon hammer
*	Inches of penetration per 50 blows
N	Blows required to drive a 2-inch-o.d. standard sampling spoon 12 inches, using a 140 lb weight falling 30 inches
Qp	Pocket penetrometer
Qu	Unconfined compressive strength
LL	Liquid limit
PL	Plastic limit (** – insufficient sample material for testing)
HSA	Hollow Stem Auger
MGS	Maag Geotechnical Services, Inc.
USCS	Unified Soil Classification System

Maag Geotechnical Services, Inc.
11159C S Towne Sq
St. Louis, MO 63123
314-843-0865

PROJECT: Jefferson County Animal Care Facility
PROJECT LOCATION: House Springs, MO **APPROXIMATE ELEVATION:** 0.0
CLIENT: Bacon Commercial Design
BORING: 1 **LOCATION:** See Site Plan
DRILLER: Bulldog Drilling **LOGGED BY:** mdm
DRILLING METHOD: CME55 3-3/4 HSA **DATE:** 11/27/19
DEPTH TO - WATER> INITIAL: ▽ 0.0 **AT BORING COMPLETION:** ▼ 0.0 **CAVING>** ⊏ n/a

Depth (feet)	Description	Graphic	USCS	Sample Type	Blow Counts 1	2	3	N	Qp (tsf)	Qu (tsf)	Dry Density (pcf)	Moisture %	LL	PL
0	Crushed dolomite (1" diameter and smaller)		GW-GM	SS	29	50/2			n/a					
2.0	Auger refusal on dolomite at 2.0 ft		ROCK											
-5														
-10														
-15														
-20														
-25														
-30														
-35														
-40														

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure 2-1

Maag Geotechnical Services, Inc.
11159C S Towne Sq
St. Louis, MO 63123
314-843-0865

PROJECT: Jefferson County Animal Care Facility
PROJECT LOCATION: House Springs, MO **APPROXIMATE ELEVATION:** 0.0
CLIENT: Bacon Commercial Design
BORING: 2 **LOCATION:** See site plan
DRILLER: Bulldog Drilling **LOGGED BY:** mdm
DRILLING METHOD: CME 55 3-3/4 HSA **DATE:** 11/27/19
DEPTH TO - WATER> INITIAL: ▽ 0.0 **AT BORING COMPLETION:** ▼ 0.0 **CAVING>** C n/a

Depth (feet)	Description	Graphic	USCS	Sample Type	Blow Counts 1	2	3	N	Qp (tsf)	Qu (tsf)	Dry Density (pcf)	Moisture %	LL	PL
0	Crushed dolomite gravel (1" diameter and smaller)		GW-GM	SS	8	6	6	12	n/a					
				SS	20	14	9	23	n/a					
-4.5	Auger refusal at 4.5 feet on dolomite bedrock		ROCK											
-5														
-10														
-15														
-20														
-25														
-30														
-35														
-40														

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure 2-2

Maag Geotechnical Services, Inc.
11159C S Towne Sq
St. Louis, MO 63123
314-843-0865

PROJECT: Jefferson County Animal Care Facility
PROJECT LOCATION: House Springs, MO **APPROXIMATE ELEVATION:** 0.0
CLIENT: Bacon Commercial Design
BORING: 3 **LOCATION:** See site plan
DRILLER: Bulldog Drilling **LOGGED BY:** mdm
DRILLING METHOD: CME55, 3-3/4 HSA **DATE:** 11/27/19
DEPTH TO - WATER> INITIAL: ▽ 0.0 **AT BORING COMPLETION:** ▼ 0.0 **CAVING>** ℄ n/a

Depth (feet)	Description	Graphic	USCS	Sample Type	Blow Counts 1	2	3	N	Qp (tsf)	Qu (tsf)	Dry Density (pcf)	Moisture %	LL	PL
0	Crushed dolomite gravel (1 inch diameter and smaller)		GW-GM					n/a	n/a					
	0.5		ROCK											
	Auger refusal at 6 inches on dolomite bedrock													
-5														
-10														
-15														
-20														
-25														
-30														
-35														
-40														

Refusal at 6 inches. Moved 2 ft west and 5 ft east. Refusal at 2 in

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure 2-3

JC-ARC-Archi-01d.dwg
PRINTED: 4/15/2020

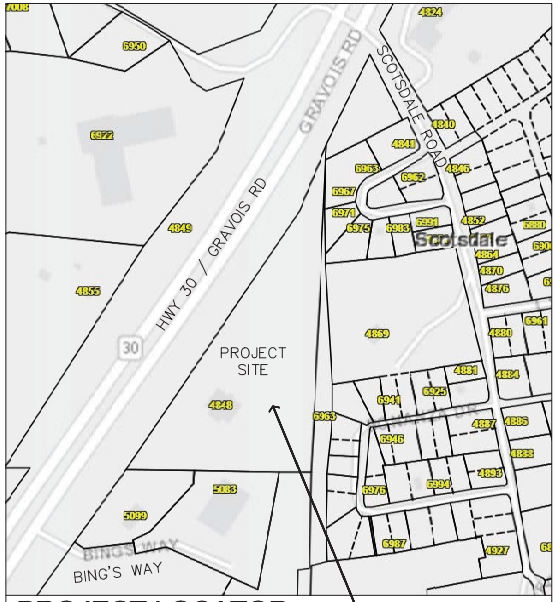
Jefferson County, Missouri
ANIMAL RESOURCE CENTER
Remodeling and Addition

4848 State Route 30
House Springs, Missouri

Public Works Project No.: PW20B035BLD

Jason Jonas, P.E.; Director

Sign/Date: _____



PROJECT LOCATOR:

GENERAL NOTES:

1) DO NOT SCALE DRAWINGS. FOLLOW WRITTEN DIMENSIONS ONLY. FOR CRITICAL DIMENSIONS NOT SHOWN IN THE DRAWINGS, REQUEST ADDITIONAL INFORMATION OR CLARIFICATION FROM THE ARCHITECT.
2) THESE DRAWINGS ARE ACCOMPANIED BY A PROJECT MANUAL, INCLUDING THE SPECIFICATIONS. DO NOT RELY SOLELY ON ONE OR THE OTHER. ADVISE THE ARCHITECT OR ENGINEER IMMEDIATELY OF ANY CONFLICTS BETWEEN THE TWO. IF NO TIMELY RESPONSE IS RECEIVED FROM THE ARCHITECT OR ENGINEER, ASSUME THE MORE EXPENSIVE OR MORE RESTRICTIVE CONDITION WILL PREVAIL.
3) EXISTING CONDITIONS DRAWINGS ARE BASED ON CASUAL OBSERVATIONS, NOT EXHAUSTIVE EXAMINATIONS. CONTRACTOR SHALL ADVISE ARCHITECT IMMEDIATELY OF ANY CONDITIONS ON THE SITE WHICH ARE AT VARIANCE WITH THE DRAWINGS OR SPECIFICATIONS.
4) CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND CONDITIONS AND MAKE MINOR ADJUSTMENTS AS NECESSARY. NOTIFY ARCHITECT OF ANY DISCREPANCIES WHICH MAY AFFECT THE OUTCOME OF THE WORK.
5) FOR INSTALLATION DETAILS, REFER FIRST TO THESE DRAWINGS. IF DESIRED DETAIL IS NOT INCLUDED, REFER TO MANUFACTURER'S TECHNICAL INFORMATION & APPLICABLE BUILDING CODES FOR ACCEPTABLE STANDARD MEANS, MATERIALS AND/OR METHODS. IF FURTHER DETAIL IS NEEDED REQUEST FROM ARCHITECT.
6) IN ALL QUESTIONS ARISING FROM APPLICATION OF THE ADOPTED BUILDING CODES, THE LOCAL AUTHORITY HAVING JURISDICTION (JEFFERSON COUNTY CODE ENFORCEMENT) SHALL BE THE FINAL ARBITER(S).
7) DO NOT CUT OR MODIFY ANY STRUCTURAL ITEM WITHOUT FIRST REVIEWING THE PROPOSED MODIFICATION WITH THE ARCHITECT AND SUBMITTING A PLAN FOR ANY TEMPORARY SHORING NECESSARY.
8) ALL MATERIALS SHALL BE NEW AND INSTALLED TO MANUFACTURER'S WRITTEN SPECIFICATIONS.
9) PROVIDE ALL NECESSARY BARRIERS AND SAFETY SIGNAGE NECESSARY FOR A SAFE WORK ENVIRONMENT, CONFORM TO ALL LOCAL, COUNTY, STATE AND FEDERAL REQUIREMENTS WHICH APPLY.
9) WHERE AN ITEM OR SYSTEM IS SHOWN TO BE INCLUDED IN THE WORK, IT SHALL BE PROVIDED AS A COMPLETE, OPERABLE, CODE-COMPLIANT ITEM OR SYSTEM. THE CONTRACTOR SHALL INCLUDE ALL CONNECTIONS, SWITCHING, POWER, VENTILATION AND ANY OTHER ACCESSORIES NECESSARY TO PROVIDE A COMPLETE, OPERABLE, CODE-COMPLIANT ITEM OR SYSTEM.
10) CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER, ARCHITECT/ENGINEER, AND OTHER TRADES THROUGHOUT THE PROJECT.
11) ROUTING OF ELECTRICAL WIRING, PLUMBING LINES (WATER SUPPLY, WASTE, DRAIN, VENTS), FIRE PROTECTION SUPPLY, AND DUCTWORK WHERE SHOWN ON PLANS IS SCHEMATIC. IT IS THE RESPONSIBILITY OF EACH OF THESE CONTRACTORS (SUBCONTRACTORS) TO COORDINATE INSTALLATION OF THESE ITEMS WITH EACH OTHER.
12) LOCATION OF HVAC EQUIPMENT (RTU'S, AIR HANDLERS, CONDENSERS, EXHAUST FANS, ETC) IF SHOWN, IS SCHEMATIC. COORDINATE THE FINAL LOCATIONS WITH OTHER TRADES AND CONSIDERATIONS AND CONFIRM WITH ARCHITECT.
13) RENDER ALL NEW OR MODIFIED PENETRATIONS THROUGH BUILDING'S EXTERIOR ENCLOSURE WEATHER TIGHT.
14) PAINT ALL NEW ROOF AND/OR WALL PENETRATIONS TO MATCH (AS CLOSELY AS IS PRACTICAL) THE ADJACENT ROOF OR WALL MATERIAL.
15) COMMENCING INSTALLATION OF ANY ITEM, EQUIPMENT OR SYSTEM INDICATES ACCEPTANCE OF ANY PRE-EXISTING CONDITION UPON WHICH THE SUBSEQUENT CONSTRUCTION IS DEPENDENT OR ATTACHED TO OR SUPPORTED ON. FOR EXAMPLE, BEGINNING FLOORING INSTALLATION REPRESENTS ACCEPTANCE OF THE SUB FLOOR CONSTRUCTION.
16) ALL EXISTING FINISHES DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO A CONDITION AT LEAST EQUAL IN MATERIAL AND APPEARANCE TO THAT WHICH EXISTED BEFORE CONSTRUCTION BEGAN.
17) PROTECT EXISTING UTILITIES DURING CONSTRUCTION.
18) UPON COMPLETION OF CONSTRUCTION ACTIVITIES, AND PRIOR TO TURNOVER OF THE PROJECT TO THE OWNER, CONTRACTOR SHALL THOROUGHLY CLEAN ALL WORK AREAS SO THAT THEY ARE FREE OF ALL CONSTRUCTION DIRT AND DEBRIS.

ARCHITECTURAL
BCD-ARCHITECT-CRYSTAL CITY, MISSOURI
P.O. BOX 605; 63019 (636) 933-0007

A-0.0 COVER SHEET, LOCATION INFORMATION
A-0.1 LIFE SAFETY, OCCUPANT LOADS, CODE BLOCK, KEY PLAN
A-1.0 EXISTING FIRST FLOOR PLAN AND DEMO
A-1.1 NEW FIRST FLOOR PLAN AREA 'A'
A-1.2 NEW FIRST FLOOR PLAN AREA 'B', INTERIOR FINISH SCHEDULE
A-1.3 NEW MEZZANINE FLOOR PLAN
A-1.4 SLAB PLAN AND DETAILS
A-2.0 EXTERIOR ELEVATIONS-NEW ADDITION, SECTIONS-NEW ADDITION
A-3.0 BUILDING SECTIONS
A-3.1 BUILDING SECTIONS
A-4.0 EXTERIOR WALL DETAILS
A-5.0 ENLARGED PLAN-ADDITION, INTERIOR FINISH ELEVATIONS
A-5.1 INTERIOR FINISH ELEVATIONS & DETAILS
A-6.0 STEEL STAIRS, GUARD/HANDRAILS
A-7.0 FIRST FLOOR AND MEZZANINE CEILING PLAN
A-8.0 ROOF PLAN
A-9.0 DOOR SCHEDULE & DETAILS
A-9.1 DOOR DETAILS
A-9.2 WINDOW SCHEDULE & DETAILS
A-10.0 FIXTURE AND EQUIPMENT PLAN AREA 'A'
A-10.1 FIXTURE AND EQUIPMENT PLAN AREA 'B'

MECHANICAL, ELECTRICAL AND PLUMBING
DYNAMIC ENGINEERED SYSTEMS, INC.

MEP1.0 GENERAL
MEP1.1 SCHEDULES/LEGENDS
MEP1.2 SPECIFICATIONS
MEP1.3 SPECIFICATIONS
M1.0 HVAC 'A' PLAN
M1.1 HVAC 'B' PLAN
M1.2 HVAC MEZZANINE PLAN
M1.3 GAS PIPING 'A' PLAN
M1.4 GAS PIPING 'B' PLAN
M1.5 HVAC DETAILS
M1.6 SCHEDULES
P1.0 DWV 'A' PLAN
P1.1 DWV 'B' PLAN
P1.2 WATER DISTR 'A' PLAN
P1.3 WATER DISTR 'B' PLAN
P1.4 PLUMBING DTLS & SCHEDULE
E0.0 SITE LIGHTING & NEW EQPMT
E1.0 LIGHTING 'A' PLAN
E1.1 LIGHTING MEZZANINE PLAN
E1.2 LIGHTING 'B' PLAN
E1.3 POWER 'A' PLAN
E1.4 POWER MEZZANINE PLAN
E1.5 POWER 'B' & GENSET PLANS
E1.6 SCHEDULES & DETAILS
E1.7 LOW VOLTAGE 'A' PLAN
E1.8 LOW VOLTAGE 'B' PLAN
E1.9 LOW VOLTAGE MEZZ PLAN

STRUCTURAL
VONARX ENGINEERING, INC.

S1.0 STRUCTURAL GENERAL NOTES
S2.1 STANDARD DETAILS
S3.0 FOUNDATION DEMO PLAN
S3.1 FOUNDATION AND SLAB PLAN 'A'
S3.2 FOUNDATION AND SLAB PLAN 'B'
S3.3 MEZZANINE PLAN AREA 'A'
S3.4 ROOF FRAMING PLAN AREA 'B'
S4.1 SECTIONS AND DETAILS
S4.2 FRAMING SECTIONS

SITE/CIVIL
VONARX ENGINEERING, INC.

C1.0 TITLE SHEET
C1.1 SITE SURVEY
C2.0 EXISTING CONDITIONS
C3.0 DEMOLITION PLAN
C4.1 SITE PLAN
C4.2 ENLARGED GRADING PLAN
C5.0 CONSTRUCTION DETAILS
C5.1 DETAILS & PROFILES

SYMBOLS

- (◇1) KEYED NOTE
- (1) DOOR NUMBER
- (⬡1) WINDOW NUMBER
- [1] EQUIPMENT NUMBER
- [P-1] PARTITION TYPE
- OFFICE (101) ROOM NAME AND NUMBER
- ⊕ EXISTING SPOT ELEVATION
- ⊕ NEW SPOT ELEVATION

COMMISSION NUMBER
19-071
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sjb
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Printed: 4/15/2020

for BIDDING & PERMIT REVIEW

for CONSTRUCTION with APPROVED PERMITS

PLAN STATUS

4/15/2020

Steven J. Bacon
Architect
MO Lic: #007402

BACON COMMERCIAL DESIGN LLC
ARCHITECTURAL Design & Consulting
po box 605
crystal city
mo 63019
(636) 933-0007
corporate authority certificate #: 2006007290

Jefferson County, Missouri
Animal Resource Center
OWNER

Remodeling and Addition
ANIMAL RESOURCE CENTER
4848 State Rte 30
House Springs, MO 63051
COMMISSION

INTERNATIONAL CODE COUNCIL:
IBC 2015
INT'L FIRE CODE 2015
INT'L MECH'L CODE 2015
INT'L ENERGY CODE 2015
INT'L PLUMB'G CODE 2015
NATIONAL ELECTRICAL CODE 2014
JEFFERSON CO. ELECTRIC 2017
BLD'G CODE(S)

COVER SHEET
LOCATION INFORMATION
SHEET TITLE

SHEET NUMBER
A-0.0
1 OF 21

JC-ARC-Archi-01d.dwg
PRINTED 2020

SHEET NOTES:

INTERNATIONAL CODE COUNCIL:
IBC 2015 CODE DATA

PROJECT AREA:
NEW SF: 1,628 SF NEW DOG KENNEL & CONNECTING CORRIDOR TO EXISTING BUILDING
EXISTING SF: 9,967 ONE STORY;
BUSINESS ADMIN AND ANIMAL CARE AREAS TOTAL SF: 11,595

SINGLE USE: BUSINESS GROUP B: ANIMAL HOSPITALS, KENNELS & POUNDS (304.1)

BUILDING CONSTRUCTION TYPE
EXISTING BUILDING: WOOD FRAME, UNPROTECTED: V-B
NEW DOG KENNEL STRUCTURE: III-Bc
EXTERIOR WALLS NON-COMBUSTIBLE, ROOF STRUCTURE COMBUSTIBLE UNPROTECTED (TABLE 601)

MEZZANINES & EQUIPMENT PLATFORMS MAY NOT EXCEED ONE THIRD OF THE AREA OF THE ROOM IN WHICH THEY OCCUR (505)
GROSS AREA OF ROOM: 2,964 SF
GROSS AREA OF MEZZANINE/EQPMT PLATFORMS: 816 SF = 27 PERCENT

ALLOWABLE BUILDING AREA: B USE GROUP; TYPE V-B CONSTRUCTION; NO AUTO FIRE SUPPRESSION => 9,000 SF

BUILDING AREA INCREASE DUE TO OPEN FRONTAGE: 30' OPEN AREA SURROUNDS ENTIRE BUILDING PERIMETER, SO ADD 75 PERCENT (6,750 SF) TO MAX BUILDING AREA: 15,750 SF MAX BUILDING AREA ALLOWED; 11,595 TOTAL SF PROPOSED (506.3).

INCIDENTAL USES: NEW LAUNDRY ROOM PROPOSED; AREA IS LESS THAN 100 SF SO NO SEPARATION OR SUPPRESSION REQUIRED;
NO CHANGES PROPOSED TO EXISTING MECHANICAL EQUIPMENT OR ROOM (TABLE 509) – M02 & M03

INTERIOR WALL & CEILING FINISHES (TABLE 803.11):
MINIMUM CLASS B IN CORRIDORS AND ALONG EXIT ACCESS ROUTES;
MINIMUM CLASS C IN ROOMS AND OTHER ENCLOSED SPACES

INTERIOR FLOOR FINISH REQUIREMENTS (804.4): NOT LESS THAN CLASS II.

903 AUTOMATIC SPRINKLER SYSTEMS: NOT REQUIRED FOR B USES

TABLE 903.2.11 ADDITIONAL REQUIRED SUPPRESSION SYSTEMS: NONE REQUIRED.

PORTABLE FIRE EXTINGUISHERS (TABLE 906.1):
1ST/GROUND FLOOR (5) REQUIRED
MEZZANINES (1) EACH REQUIRED
SEE PLANS FOR LOCATIONS, CONFIRM WITH LOCAL FIRE AUTHORITY PRIOR TO INSTALLATION.
MAX TRAVEL DISTANCE TO A PORTABLE EXTINGUISHER: 75 FEET.

FIRE ALARM SYSTEMS (907): NOT REQUIRED FOR THIS B USAGE, HOWEVER, AN EXISTING DETECTION AND ALARM SYSTEM WILL BE MODIFIED/UPDATED TO ACCOMMODATE THE PROPOSED BUILDING CHANGES.

TABLE 1004.1.2 OCCUPANT LOAD CALCULATION
BUSINESS & ADMINISTRATIVE AREAS: 6,497 SF AT ONE OCCUPANT PER 100 GROSS SQUARE FEET = 65
ANIMAL CARE AREAS: 5,098 SF AT ONE OCCUPANT PER 300 GSF = 18
TOTAL CALCULATED OCCUPANT LOAD: 83

MAXIMUM COMMON PATH OF EGRESS TRAVEL (TABLE 1006.2.1)
OCCUPANT LOAD 30 OR LESS: 100 FEET
OCC LOAD 31 OR MORE: 75 FEET
MAX COMMON PATH OF EGRESS FROM MEZZANINES: 67 FEET.

MEANS OF EGRESS DOOR SWING MUST BE IN DIRECTION OF TRAVEL WHERE OCCUPANT LOAD IS 50 OR MORE (1010.1.2.1)

THRESHOLDS SHALL NOT EXCEED ONE HALF INCHES HIGH (1010.1.7)

HARDWARE HEIGHT: DOOR HANDLES, PULLS, LATCHES, LOCKS AND OTHER OPERATING DEVICES SHALL BE INSTALLED 34 INCHES MINIMUM AND 48 INCHES MAXIMUM ABOVE THE FINISHED FLOOR. LOCKS USED ONLY FOR SECURITY PURPOSES AND NOT USED FOR NORMAL OPERATION ARE PERMITTED AT ANY HEIGHT (1010.1.9.2);

1010.1.10 PANIC HARDWARE NOT REQUIRED IN B USES (1010.1.10)
IF PANIC OR FIRE EXIT HARDWARE IS INSTALLED, IT SHALL BE LISTED IN ACCORD WITH UL 305 AND UL 10C; THE ACTUATING PORTION OF THE RELEASING MECHANISM SHALL EXTEND NOT LESS THAN ONE HALF THE WIDTH OF THE DOOR LEAF; AND THE MAXIMUM UNLATCHING FORCE SHALL NOT EXCEED 15 POUNDS.

MINIMUM WIDTH FOR STAIRS SERVING OCCUPANT LOADS LESS THAN 50 SHALL BE 36 INCHES (1011); 40" PROVIDED.

MAXIMUM EXIT ACCESS TRAVEL DISTANCE: 200 FEET (TABLE 1017.2)

NO REQUIRED FIRE RESISTANCE RATING FOR CORRIDORS IN B USES, WITH OCCUPANT LOAD SERVED 30 OR LESS (TABLE 1020.1)

CORRIDOR MINIMUM WIDTH: 44 INCHES (TABLE 1020.2)

DEFLECTION LIMITS: NEW PARTITIONS SHALL NOT DEFLECT MORE THAN THE PARTITIONS HEIGHT/240, WHEN A LATERAL LOAD OF 5 PSF IS APPLIED.(TABLE 1604.3)

OCCUPANCY CLASSIFICATION: II (TABLE 1604.5)

ELEVATED PLATFORMS (MEZZANINES): 60 PSF LL (TABLE 1607.1)
ALL OTHER FLOORS TO BE CONCRETE SLAB ON GRADE

NEW ROOF GROUND SNOW LOAD: 20 PSF (FIGURE 1608.2)

ULTIMATE DESIGN WIND SPEEDS (CATEGORY II BUILDINGS): 115 MPH (SECTION 1609)

MINIMUM PLUMBING FACILITIES REQUIRED:
WATER CLOSETS: 1 PER 25 (EACH SEX); TWO EACH REQUIRED / MIN FOUR PROVIDED FOR EACH SEX.
LAVATORIES: ONE PER 40 (EACH SEX); TWO EACH REQUIRED / MIN TWO PROVIDED FOR EACH SEX

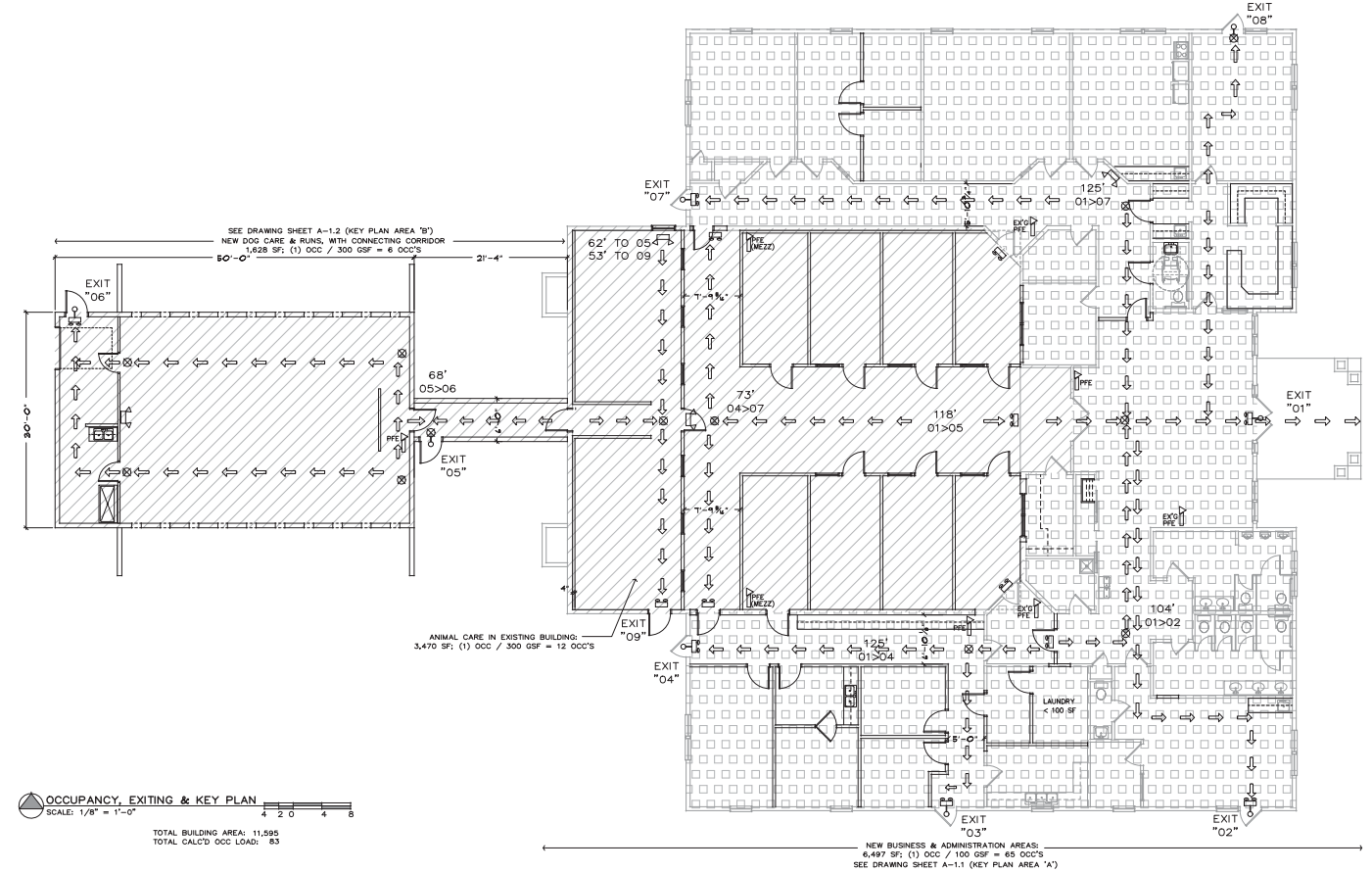
DRINKING FOUNTAIN OR PUBLIC WATER ACCESS: ONE REQUIRED
SERVICE/JANITOR SINK: (1) REQUIRED (EX'G)

FIRE DEPARTMENT: HIGH RIDGE FIRE PROTECTION DISTRICT
RON TISIUS, FIRE MARSHAL
2842 HIGH RIDGE BLVD; HIGH RIDGE, MO 63049
636-677-3371, EXT 157
RTISIUS@HIGHRIDGEFIRE.COM

PERMIT ISSUERS:
HIGH RIDGE FIRE DEPARTMENT

VILLAGE OF SCOTSDALE, MISSOURI
APPLICATION FOR BUILDING PERMIT AND APPLICABLE FEES TO BE BORNE BY G.C.

UTILITIES:
NATURAL GAS– NA
ELECTRICITY– AMEREN
WATER– PRIVATE WELL; EXISTING
SEWER– PRIVATE ON-SITE; EXISTING
TELEPHONE– AT&T



OCCUPANCY, EXITING & KEY PLAN
SCALE: 1/8" = 1'-0"
4 2 0 4 8

TOTAL BUILDING AREA: 11,595
TOTAL CALC'D OCC LOAD: 83

ABBREVIATIONS:

#	POUND OR NUMBER
&	AND
@	AT
ACT	ACOUSTIC CEILING TILE
AD	AREA DRAIN
ADA	AMERICANS FOR DISABILITY ACT
AFF	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
ANOD	ANODIZED
B/TD	BOTTOM OF TRENCH DRAIN
BETW	BETWEEN
BM	BENCH MARK
BOT	BOTTOM
BSMT	BASEMENT
BYND	BEYOND
CALC'D	CALCULATED
CER. OR T. TILE	CERAMIC TILE
CHNL	CHANNEL
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CL	CENTER LINE
CLG, CEIL'G	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMPR	COMPRESSIBLE
CONC	CONCRETE
CONCR	
CONT	CONTINUOUS
CORR	CORRIDOR
CPT	CARPET
CT	CERAMIC TILE
DBL	DOUBLE
DEMO	DEMOLISH OR DEMOLITION
DIA, Ø	DIAMETER
DIM(S)	DIMENSION(S)
DN	DOWN
DR	DOOR
DS	DOWN SPOUT
DWG	DRAWING
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR OR ELEVATION
EPDM	ETHYLENE PROPYLENE DIENE M-CLASS (ROOFING)
EQ	EQUAL
EXIST	EXISTING
EX'G, EXIST'G	
EXP.JT, EJ	EXPANSION JOINT
EXT	EXTERIOR
FA	FIRE ALARM
FD	FLOOR DRAIN OR FIRE DEPT
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FG	FIBERGLASS
FIXT	FIXTURE
FLR	FLOOR
FND	FOUNDATION
FO	FACE OF
FRP	FIBERGLASS REINFORCED PANEL
FV	FIELD VERIFY
GA	GAUGE
GALV	GALVANIZED
GB	GYPSUM BOARD
GC	GENERAL CONTRACTOR
GSF	GROSS SQUARE FEET
GWB	GYPSUM WALL BOARD
GYP BD	GYPSUM BOARD
HC	HOLLOW CORE
HM	HOLLOW METAL
HPL	HIGH PRESSURE LAMINATE
HR	HOUR
HVAC	HEATING, VENTILATING, & AIR CONDITIONING
ILO	IN LIEU OF
INSUL	INSULATED OR INSULATION
INT	INTERIOR
INTL	INTERNATIONAL
LF	LINEAL FEET
LL	LOWER LEVEL
LVT	LUXURY VINYL TILE
MAX	MAXIMUM
MECH	MECHANICAL
MEJ	MASONRY EXPANSION JOINT
MEMBR	MEMBRANE
MEZZ	MEZZANINE
MIN	MINIMUM or MINUTE
MO	MASONRY OPENING
MPH	MILES PER HOUR
MRGWB	MOISTURE-RESISTANT GYPSUM WALL BOARD
MTL	METAL
NA	NOT APPLICABLE
NC	NO CHANGE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NON-STR	NON-STRUCTURAL
OC	ON CENTER
OCC, OCCY	OCCUPANCY
OH	OVERHANG OR OPPOSITE HAND
OHD	OVERHEAD DOOR
OHS	OVERHEAD SECTIONAL (DOOR)
OPG	OPENING
OPP	OPPOSITE OR OPPOSITE HAND
OZ	OUNCE
PCC	PRE-CAST CONCRETE
PLUMB, PLBG	PLUMBING
PLYD	PLYWOOD
PLYWD, PWD	
PNT	PAINT OR PAINTED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PAINT OR PRESSURE TREATED
PTD	PAINTED
PTN, PARTN	PARTITION
PVC	POLYVINYL CHLORIDE
RBR	RUBBER
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
RE	REGARDING
REQD	REQUIRED
RM	ROOM
RTU	ROOF TOP UNIT
SF	SQUARE FEET
SHTG	SHEATHING
SIM	SIMILAR
SPEC	SPECIFIED OR SPECIFICATION
SPK	SPRINKLER OR SPEAKER
SSTL, SS	STAINLESS STEEL
STC	SOUND TRANSMISSION COEFFICIENT
STL	STEEL
STRUCT	STRUCTURE OR STRUCTURAL
T/D	TELEPHONE/DATA
T/TD	TOP OF TRENCH DRAIN
T&G	TONGUE AND GROOVE
TELE	TELEPHONE
TLT	TOILET
TME	TO MATCH EXISTING
TO	TOP OF
TOC	TOP OF CONCRETE
TOS	TOP OF STEEL
TPD	TOILET PAPER DISPENSER
TR DR	TRENCH DRAIN
TYP	TYPICAL
U/S	UNDERSIDE
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
USC	UNDER SEPARATE CONTRACT
VIF	VERIFY IN FIELD
VP	VISION PANEL
W/	WITH
WD	WOOD

GENERAL NOTES:

1) DO NOT SCALE DRAWINGS. FOLLOW WRITTEN DIMENSIONS ONLY. FOR CRITICAL DIMENSIONS NOT SHOWN IN THE DRAWINGS, REQUEST ADDITIONAL INFORMATION OR CLARIFICATION FROM THE ARCHITECT.
2) THESE DRAWINGS ARE ACCOMPANIED BY A PROJECT MANUAL, INCLUDING THE SPECIFICATIONS. DO NOT RELY SOLELY ON ONE OR THE OTHER. ADVISE THE ARCHITECT OR ENGINEER IMMEDIATELY OF ANY CONFLICTS BETWEEN THE TWO. IF NO TIMELY RESPONSE IS RECEIVED FROM THE ARCHITECT OR ENGINEER, ASSUME THE MORE EXPENSIVE OR MORE RESTRICTIVE CONDITION WILL PREVAIL.
3) EXISTING CONDITIONS DRAWINGS ARE BASED ON CASUAL OBSERVATIONS, NOT EXHAUSTIVE EXAMINATIONS. CONTRACTOR SHALL ADVISE ARCHITECT IMMEDIATELY OF ANY CONDITIONS ON THE SITE WHICH ARE AT VARIANCE WITH THE DRAWINGS OR SPECIFICATIONS.
4) CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND CONDITIONS AND MAKE MINOR ADJUSTMENTS AS NECESSARY. NOTIFY ARCHITECT OF ANY DISCREPANCIES WHICH MAY AFFECT THE OUTCOME OF THE WORK.
5) FOR INSTALLATION DETAILS, REFER FIRST TO THESE DRAWINGS. IF DESIRED DETAIL IS NOT INCLUDED, REFER TO MANUFACTURER'S TECHNICAL INFORMATION & APPLICABLE BUILDING CODES FOR ACCEPTABLE STANDARD MEANS, MATERIALS AND/OR METHODS. IF FURTHER DETAIL IS NEEDED REQUEST FROM ARCHITECT.
6) IN ALL QUESTIONS ARISING FROM APPLICATION OF THE ADOPTED BUILDING CODES, THE LOCAL AUTHORITY HAVING JURISDICTION (JEFFERSON COUNTY CODE ENFORCEMENT) SHALL BE THE FINAL ARBITER(S).
7) DO NOT CUT OR MODIFY ANY STRUCTURAL ITEM WITHOUT FIRST REVIEWING THE PROPOSED MODIFICATION WITH THE ARCHITECT AND SUBMITTING A PLAN FOR ANY TEMPORARY SHORING NECESSARY.
8) ALL MATERIALS SHALL BE NEW AND INSTALLED TO MANUFACTURER'S WRITTEN SPECIFICATIONS.
8) PROVIDE ALL NECESSARY BARRIERS AND SAFETY SIGNAGE NECESSARY FOR A SAFE WORK ENVIRONMENT, CONFORM TO ALL LOCAL, COUNTY, STATE AND FEDERAL REQUIREMENTS WHICH APPLY.
9) WHERE AN ITEM OR SYSTEM IS SHOWN TO BE INCLUDED IN THE WORK, IT SHALL BE PROVIDED AS A COMPLETE, OPERABLE, CODE-COMPLIANT ITEM OR SYSTEM. THE CONTRACTOR SHALL INCLUDE ALL CONNECTIONS, SWITCHING, POWER, VENTILATION AND ANY OTHER ACCESSORIES NECESSARY TO PROVIDE A COMPLETE, OPERABLE, CODE-COMPLIANT ITEM OR SYSTEM.
10) CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER, ARCHITECT/ENGINEER, AND OTHER TRADES THROUGHOUT THE PROJECT.
11) ROUTING OF ELECTRICAL WIRING, PLUMBING LINES (WATER SUPPLY, WASTE, DRAIN, VENTS), FIRE PROTECTION SUPPLY, AND DUCTWORK WHERE SHOWN ON PLANS IS SCHEMATIC. IT IS THE RESPONSIBILITY OF EACH OF THESE CONTRACTORS (SUBCONTRACTORS) TO COORDINATE INSTALLATION OF THESE ITEMS WITH EACH OTHER.
12) LOCATION OF HVAC EQUIPMENT (RTU'S, AIR HANDLERS, CONDENSERS, EXHAUST FANS, ETC) IF SHOWN, IS SCHEMATIC. COORDINATE THE FINAL LOCATIONS WITH OTHER TRADES AND CONSIDERATIONS AND CONFIRM WITH ARCHITECT.
13) RENDER ALL NEW OR MODIFIED PENETRATIONS THROUGH BUILDING'S EXTERIOR ENCLOSURE WEATHER TIGHT.
14) PAINT ALL NEW ROOF AND/OR WALL PENETRATIONS TO MATCH (AS CLOSELY AS IS PRACTICAL) THE ADJACENT ROOF OR WALL MATERIAL.
15) COMMENCING INSTALLATION OF ANY ITEM, EQUIPMENT OR SYSTEM INDICATES ACCEPTANCE OF ANY PRE-EXISTING CONDITION UPON WHICH THE SUBSEQUENT CONSTRUCTION IS DEPENDENT OR ATTACHED TO OR SUPPORTED ON. FOR EXAMPLE, BEGINNING FLOORING INSTALLATION REPRESENTS ACCEPTANCE OF THE SUB FLOOR CONSTRUCTION.
16) ALL EXISTING FINISHES DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO A CONDITION AT LEAST EQUAL IN MATERIAL AND APPEARANCE TO THAT WHICH EXISTED BEFORE CONSTRUCTION BEGAN.
17) PROTECT EXISTING UTILITIES DURING CONSTRUCTION.
18) UPON COMPLETION OF CONSTRUCTION ACTIVITIES, AND PRIOR TO TURNOVER OF THE PROJECT TO THE OWNER, CONTRACTOR SHALL THOROUGHLY CLEAN ALL WORK AREAS SO THAT THEY ARE FREE OF ALL CONSTRUCTION DIRT AND DEBRIS.

LEGEND

- PFE PORTABLE FIRE EXTINGUISHER
- COMBINATION EMERGENCY AND EXIT SIGN; 90-MINUTE BACKUP POWER
- COMBINATION EMERGENCY AND EXIT SIGN; 90-MINUTE BACKUP POWER; WITH EXTERIOR REMOTE HEAD
- EXIT SIGN; DIRECTIONAL; WITH 90-MINUTE BACKUP POWER
- EXIT SIGN; DIRECTIONAL; WITH 90-MINUTE BACKUP POWER; WITH EXTERIOR REMOTE HEAD
- EMERGENCY LIGHT; WITH 90-MINUTE BACKUP POWER
- EXIT ROUTE
- ANIMAL CARE OCCUPANCY AREA
- BUSINESS/ADMINISTRATIVE AREA

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for BIDDING & PERMIT REVIEW

for CONSTRUCTION with APPROVED PERMITS

PLAN STATUS

4/15/2020

Steven J. Bacon
Architect
MO Lic: #007402

BACON COMMERCIAL DESIGN LLC
ARCHITECTURAL Design & Consulting
po box 605
crystal city
mo 63019
(636) 933-0007
corporate authority certificate #: 2006007290

Jefferson County, Missouri
Animal Resource Center

OWNER

Remodeling and Addition
ANIMAL RESOURCE CENTER
4848 State Rte 30
House Springs, MO 63051

COMMISSION

INTERNATIONAL CODE COUNCIL:
IBC 2015
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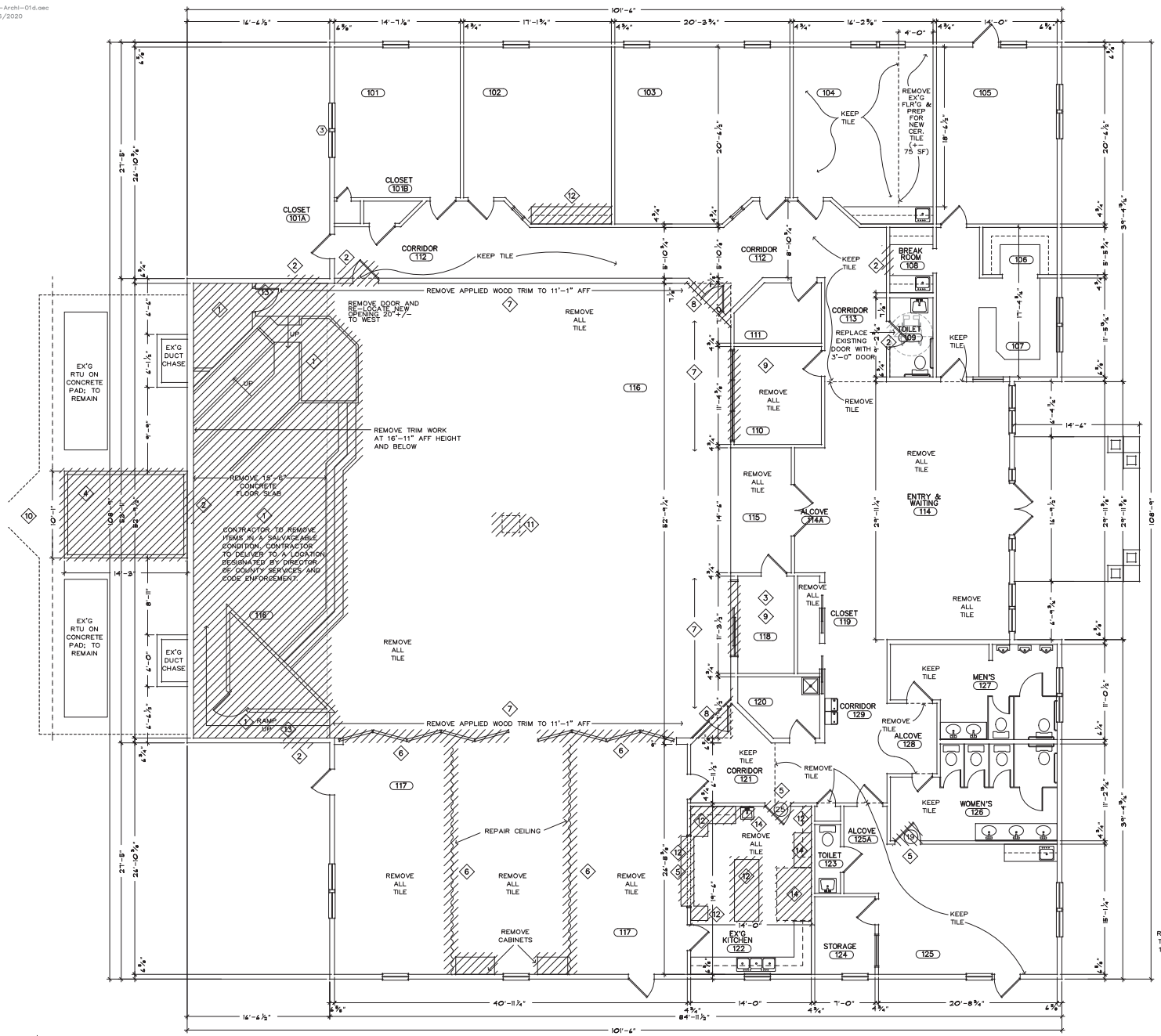
INT'L ENERGY CODE 2015
INT'L PLUMB'G CODE 2015
NATIONAL ELECTRICAL CODE 2014
JEFFERSON CO. ELECTRIC 2017

BLD'G CODE(S)

LIFE SAFETY
OCCUPANT LOADS
CODE BLOCK
KEY PLAN

SHEET TITLE

SHEET NUMBER
A-0.1
2 OF 21



EXISTING FLOOR PLAN–DEMOLITION
SCALE: 3/16" = 1'–0"

4 2 0 4 8

SHEET NOTES:

SEE ALSO SPEC'S SECTIONS:
02 4100 DEMOLITION
09 0561 FLOORING PREPARATIONS

LEGEND

DEMOLITION AREA OR ELEMENT

KEYED NOTES:

1. CONTRACTOR TO REMOVE EXISTING BUILT UP STAGE AND STORAGE AREAS, INCLUDING BAPTISTRY. (+–950 SF)
2. OPENING IN WALL FOR NEW DOOR OR WINDOW
3. REMOVE EXISTING WOOD FRAMED RAISED FLOOR, COUNTERTOP AND CABINETS. RE–INSTALL CABINETS AND COUNTERTOPS AT EXISTING FLOOR LEVEL (100'–0"). PREP WALLS AND FLOOR FOR NEW FINISHES. SEE S–4, A–3.1.
4. GC TO MOVE EXISTING SHED TO NEW LOCATION (SEE C4.1). REMOVE FENCE GATES, AND RE–USE MATERIAL TO EXTEND EXISTING FENCE LINES TO EXTERIOR WALL OF NEW CORRIDOR.
5. REMOVE EXISTING DOOR OR OPENING AND PROVIDE INFILL WALL TO MATCH EXISTING.
6. REMOVE FOLDING PARTITION AND SUPPORT AT CEILING. PATCH AND REPAIR ADJACENT CEIL'G & WALLS
7. REMOVE APPLIED WOOD WALL TRIM UP TO 11'–1" AFF, PATCH AND REPAIR. SEE DETAIL BELOW.
8. DEMO FLAT SURFACE ABOVE DOORWAY FOR NEW MEZZANINE FLOOR STRUCTURE.
9. REMOVE EXISTING WINDOW/OPENING. RE–FRAME NEW WINDOW OPENING. PATCH/REPAIR WALL AND PREP FOR NEW WALL FINISH. SEE S–4, A–3.1.
10. REMOVE EXISTING FENCE AND RETAIN TO RE–INSTALL; SEE KEYED NOTE 4, A–1.2.
11. REMOVE EXISTING CEILING MOUNTED PROJECTOR AND ALL ACCESSORIES AND RETURN TO OWNER FOR RE–USE. PATCH & REPAIR ANY OPEN–INGS IN WALL OR CEILING ASSOC–CIATED WITH THIS REMOVAL AND PREPARE FOR NEW FINISHES.
12. REMOVE EXISTING CABINETS AND COUNTERTOPS; PATCH & REPAIR ADJACENT WALL, CEILING & FLOOR & PREP FOR NEW FINISHES.
13. REMOVE EXISTING INTERIOR GYP BOARD FROM THIS WALL FROM FLOOR TO 36" AFF. PREP WALL TO RECEIVE NEW 1/2" MARINE GRADE PLY'WD from FLOOR TO 36" AFF. THIS WALL TO RECEIVE NEW FRP WALL COVERING FLOOR TO CEILING (APPROX 148 SF X 2 LOCATIONS)
14. REMOVE EXISTING KITCHEN EQUIP–MENT & RETURN TO OWNER FOR FUTURE RE–USE. REMOVE ALL ASSOCIATED DUCT–WORK, PIPING, WIRING, CONTROLS, ACCESSORIES; PATCH & REPAIR ADJACENT WALL, CEILING & FLOOR & PREP FOR NEW FINISHES.

GENERAL NOTES:

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5) FOR INSTALLATION DETAILS, REFER FIRST TO THESE DRAWINGS. IF DESIRED DETAIL IS NOT INCLUDED, REFER TO MANUFACTURER'S TECHNICAL INFORMATION & APPLICABLE BUILDING CODES FOR ACCEPTABLE STANDARD MEANS, MATERIALS AND/OR METHODS. IF FURTHER DETAIL IS NEEDED REQUEST FROM ARCHITECT.
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7) DO NOT CUT OR MODIFY ANY STRUCTURAL ITEM WITHOUT FIRST REVIEWING THE PROPOSED MODIFICATION WITH THE ARCHITECT AND SUBMITTING A PLAN FOR ANY TEMPORARY SHORING NECESSARY.
8) ALL MATERIALS SHALL BE NEW AND INSTALLED TO MANUFACTURER'S WRITTEN SPECIFICATIONS.
8) PROVIDE ALL NECESSARY BARRIERS AND SAFETY SIGNAGE NECESSARY FOR A SAFE WORK ENVIRONMENT, CONFORM TO ALL LOCAL, COUNTY, STATE AND FEDERAL REQUIREMENTS WHICH APPLY.
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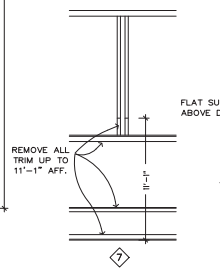
10) CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER, ARCHITECT/ENGINEER, AND OTHER TRADES THROUGHOUT THE PROJECT.
11) ROUTING OF ELECTRICAL WIRING, PLUMBING LINES (WATER SUPPLY, WASTE, DRAIN, VENTS), FIRE PROTECTION SUPPLY, AND DUCTWORK WHERE SHOWN ON PLANS IS SCHEMATIC. IT IS THE RESPONSIBILITY OF EACH OF THESE CONTRACTORS (SUBCONTRACTORS) TO COORDINATE INSTALLATION OF THESE ITEMS WITH EACH OTHER.
12) LOCATION OF HVAC EQUIPMENT (RTU'S, AIR HANDLERS, CONDENSERS, EXHAUST FANS, ETC) IF SHOWN, IS SCHEMATIC. COORDINATE THE FINAL LOCATIONS WITH OTHER TRADES AND CONSIDERATIONS AND CONFIRM WITH ARCHITECT.
13) RENDER ALL NEW OR MODIFIED PENETRATIONS THROUGH BUILDING'S EXTERIOR ENCLOSURE WEATHER TIGHT.
14) PAINT ALL NEW ROOF AND/OR WALL PENETRATIONS TO MATCH (AS CLOSELY AS IS PRACTICAL) THE ADJACENT ROOF OR WALL MATERIAL.
15) COMMENCING INSTALLATION OF ANY ITEM, EQUIPMENT OR SYSTEM INDICATES ACCEPTANCE OF ANY PRE–EXISTING CONDITION UPON WHICH THE SUBSEQUENT CONSTRUCTION IS DEPENDENT OR ATTACHED TO OR SUPPORTED ON. FOR EXAMPLE, BEGINNING FLOORING INSTALLATION REPRESENTS ACCEPTANCE OF THE SUB FLOOR CONSTRUCTION.
16) ALL EXISTING FINISHES DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO A CONDITION AT LEAST EQUAL IN MATERIAL AND APPEARANCE TO THAT WHICH EXISTED BEFORE CONSTRUCTION BEGAN.
17) PROTECT EXISTING UTILITIES DURING CONSTRUCTION.
18) UPON COMPLETION OF CONSTRUCTION ACTIVITIES, AND PRIOR TO TURNOVER OF THE PROJECT TO THE OWNER, CONTRACTOR SHALL THOROUGHLY CLEAN ALL WORK AREAS SO THAT THEY ARE FREE OF ALL CONSTRUCTION DIRT AND DEBRIS.



ROOM 116 DEMO DETAILS
SCALE: 3/16" = 1'–0"

COMMISSION NUMBER
19-071
DRAWN BY
sjb/mjb
CHECKED BY
sjb
ISSUED: 4/15/2020
Printed: 4/15/2020

for BIDDING & PERMIT REVIEW

for CONSTRUCTION with APPROVED PERMITS

PLAN STATUS

Steven J. Bacon
Architect
MO Lic: #007402

BACON COMMERCIAL DESIGN LLC

ARCHITECTURAL Design & Consulting

po box 605
crystal city
mo 63019
(636) 933-0007

corporate authority certificate #: 2006007290

Jefferson County, Missouri
Animal Resource Center

OWNER

Remodeling and Addition
ANIMAL RESOURCE CENTER
4848 State Rte 30
House Springs, MO 63051

COMMISSION

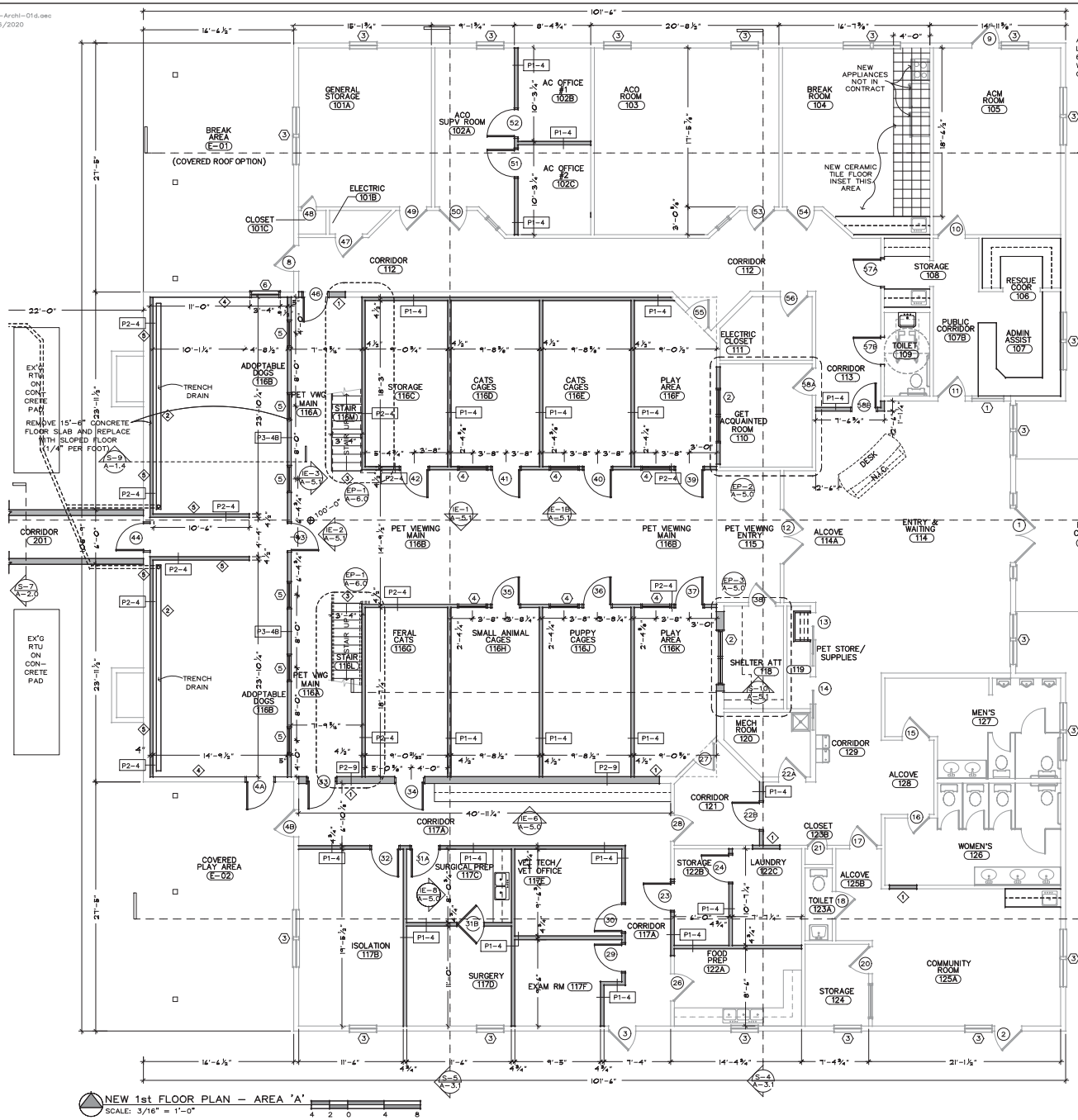
INTERNATIONAL CODE COUNCIL:
IBC 2015
INT'L FIRE CODE 2015
INT'L MECH'L CODE 2015
INT'L ENERGY CODE 2015
INT'L PLUMB'G CODE 2015
NATIONAL ELECTRICAL CODE 2014
JEFFERSON CO. ELECTRIC 2017

BLD'G CODE(S)

EXISTING FIRST FLOOR PLAN AND DEMO

SHEET TITLE

SHEET NUMBER
A-1.0
3 OF 21



NEW 1st FLOOR PLAN – AREA 'A'
SCALE: 3/16" = 1'-0"

SHEET NOTES:

1. SEE SLAB PLAN SHEET A-1.4 FOR DETAILS ON NEW OR REPLACED CONCRETE SLABS. SEE ALSO STRUCTURAL ENGINEER'S PLANS, DETAILS AND SPEC'S.
2. SEE FIXTURE/EQUIPMENT PLAN FOR INFORMATON RE: OWNER AND GC SUPPLIED ITEMS A-10.0 AND A-10.1.

SEE ALSO SPEC'S SECTIONS:
05 5100 STEEL STAIRS
06 4100 ARCH'L WOOD CASEWORK
09 2116 GYPSUM BOARD ASSEMBLIES
12 3600 COUNTERTOPS
DIVISION 9 FINISHES
DIVISION 10 SPECIALTIES

SEE ALSO:
INTERIOR FINISH SCHEDULE A-1.2
DOOR SCHEDULE A-9.0
WINDOW SCHEDULE A-9.2

KEYED NOTES:

1. INFILL AT EXISTING WALL. MATCH EXISTING WIDTH; FINISH G.B. AND PREP FOR NEW WALL FINISH.
2. NEW TRENCH DRAIN CAST INTO NEW CONCRETE SLAB.
3. PROVIDE ONE VISUAL BARRIER SIGN KIT AT BASE OF EACH STAIR; TWO REQUIRED. SEE FINISH SCHEDULE AND SPEC'S SECTION 10 1400 & A6.0.
4. INSTALL NEW MARINE GRADE PLYWOOD 1/2" IN PLACE OF REMOVED GYPSUM BOARD THIS WALL, FLOOR TO 36" AFF. PROVIDE NEW FRP WALLCOVERING OVER THIS ENTIRE WALL, FLOOR TO CEILING HEIGHT.
5. INSTALL 1/2" MARINE PLYWOOD FROM FLOOR TO 36" AFF ON WET SIDE OF THIS PARTITION.

LEGEND:

- 1 — KEYED NOTE
- 1 — DOOR NUMBER
- 1 — WINDOW NUMBER
- P-1 — PARTITION TYPE
- NEW DOOR/OPENING
- EXISTING DOOR/OPENING

GENERAL NOTES:

1) DO NOT SCALE DRAWINGS. FOLLOW WRITTEN DIMENSIONS ONLY. FOR CRITICAL DIMENSIONS NOT SHOWN IN THE DRAWINGS, REQUEST ADDITIONAL INFORMATION OR CLARIFICATION FROM THE ARCHITECT.
2) THESE DRAWINGS ARE ACCOMPANIED BY A PROJECT MANUAL, INCLUDING THE SPECIFICATIONS. DO NOT RELY SOLELY ON ONE OR THE OTHER. ADVISE THE ARCHITECT OR ENGINEER IMMEDIATELY OF ANY CONFLICTS BETWEEN THE TWO. IF NO TIMELY RESPONSE IS RECEIVED FROM THE ARCHITECT OR ENGINEER, ASSUME THE MORE EXPENSIVE OR MORE RESTRICTIVE CONDITION WILL PREVAIL.
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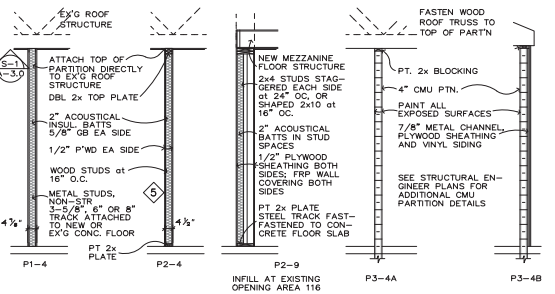

PARTITION/WALL TYPES

NO SCALE

ALL GYP BOARD SHEATHING ON NEW PARTITIONS: 5/8" TYPE X.

COMMISSION NUMBER
19-071
DRAWN BY
sjb/mjb
CHECKED BY
sjb
ISSUED: 4/15/2020
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for BIDDING & PERMIT REVIEW

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PLAN STATUS

4/15/2020

Steven J. Bacon
Architect
MO Lic: #007402

BACON COMMERCIAL DESIGN LLC
ARCHITECTURAL Design & Consulting
po box 605
crystal city
mo 63019
(636) 933-0007
corporate authority certificate #: 2006007290

Jefferson County, Missouri
Animal Resource Center

OWNER

Remodeling and Addition
ANIMAL RESOURCE CENTER
4848 State Rte 30
House Springs, MO 63051

COMMISSION

INTERNATIONAL CODE COUNCIL:
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INT'L FIRE CODE 2015
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INT'L PLUMB'G CODE 2015
NATIONAL ELECTRICAL CODE 2014
JEFFERSON CO. ELECTRIC 2017

BLD'G CODE(S)

NEW FIRST FLOOR PLAN AREA 'A'

SHEET TITLE

SHEET NUMBER
A-1.1
4 OF 21

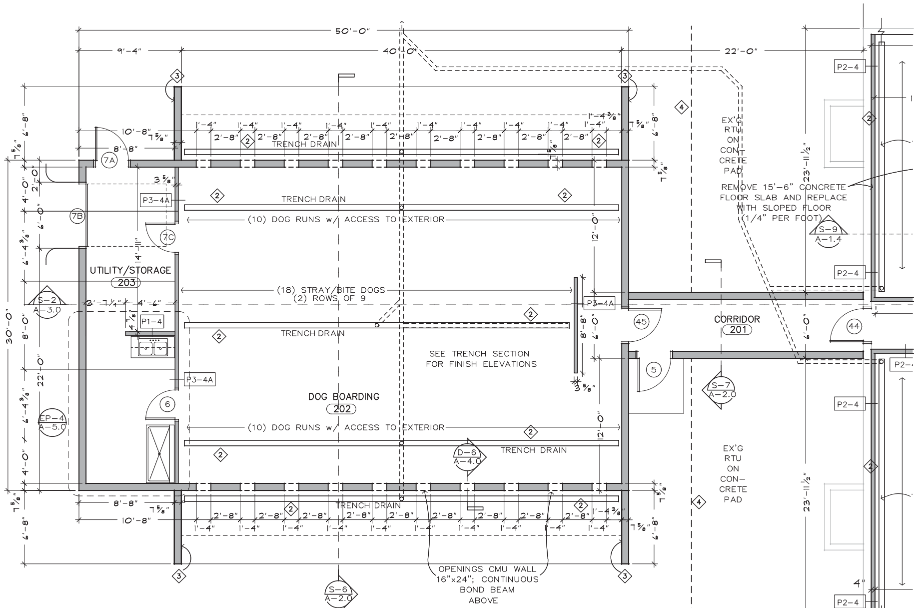
JC-ARC-Archl-01d.aec
PRIN4/16/2020

INTERIOR FINISH SCHEDULE

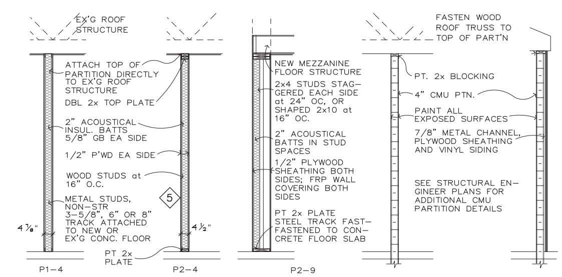
RM #	NAME	FLOOR	BASE	WALLS NORTH	WALLS EAST	WALLS SOUTH	WALLS WEST	CEILINGS		CORNER GUARDS
101A	GENERAL STORAGE	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
101B	ELECTRIC CLOSET	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
101C	CLOSET	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
102A	ACO SUPERVISOR OFFICE	EXIST'G NC	EXIST'G & NEW 4" VB	PAINT (2)	PAINT (1/3)	PAINT (2)	PAINT (2)	EX'G PT(1) & (Z)	109-1/8"	(1)90d;(1) 135d
102B	AC OFFICE #1	EXIST'G NC	NEW 4" VB	PAINT (2)	PAINT (2)	PAINT (3)	PAINT (3)	EX'G PT(1) & (Z)	109-1/8"	NONE
102C	AC OFFICE #2	EXIST'G NC	NEW 4" VB	PAINT (3)	PAINT (2)	PAINT (3)	PAINT (3)	EX'G PT(1) & (Z)	109-1/8"	NONE
103	ACO ROOM	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	(1) 135d
104	BREAK ROOM	EXIST'G TILE (Y)	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	(1) 135d
105	ACM ROOM	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
106	RESCUE COORDINATOR	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	(4) 90d
107	ADMIN ASSISTANT	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
107B	PUBLIC CORRIDOR	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
108	BREAK ROOM	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	(4) 90d
109	ADA TOILET	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
110	GET ACQUAINTED ROOM	NEW CER TILE	NEW 6" CER TILE	PAINT (4)	PAINT (4)	PAINT (4)	PAINT (4)	EXIST'G PAINT (1)	109-1/8"	NONE
111	ELECTRIC CLOSET	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
112	CORRIDOR	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	(1)90d;(6) 135d
113	CORRIDOR	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
114	ENTRY & WAITING	NEW CER TILE (X)	NEW 6" CER TILE	PAINT (4)	PAINT (4)	PAINT (4)	PAINT (4)	EXIST'G PAINT (1)	109-1/8"	(2) 90d
114A	ALCOVE	NEW CER TILE	NEW 6" CER TILE	PAINT (4)	PAINT (4)	PAINT (4)	PAINT (4)	EXIST'G PAINT (1)	109-1/8"	(2) 90d
115	PET VIEWING ENTRY	NEW CER TILE	NEW 6" CER TILE	PAINT (3)	PAINT (3)	PAINT (3)	PAINT (3)	OPEN TO ABOVE(W)	109-1/8"	NONE
116A	PET VIEWING MAIN	NEW CER TILE	NEW 6" CER TILE	PAINT (3)	PAINT (3)	PAINT (3)	PAINT (3)	OPEN TO ABOVE(W)		NONE
116B	ADOPTABLE DOGS	EPOXY	EPOXY 6"	FRP	FRP	FRP	FRP	PAINTED (3) GB	117-1/2"	(4) 90d
116C	STORAGE	EPOXY	EPOXY 6"	FRP	FRP	FRP	FRP	PAINTED (3) GB	109-1/8"	NONE
116D	CATS CAGES	EPOXY	EPOXY 6"	FRP	FRP	FRP	FRP	PAINTED (3) GB	109-1/8"	NONE
116E	CATS CAGES	EPOXY	EPOXY 6"	FRP	FRP	FRP	FRP	PAINTED (3) GB	109-1/8"	NONE
116F	PLAY AREA	EPOXY	EPOXY 6"	FRP	FRP	FRP	FRP	PAINTED (3) GB	109-1/8"	NONE
116G	FERAL CATS	EPOXY	EPOXY 6"	FRP	FRP	FRP	FRP	PAINTED (3) GB	109-1/8"	NONE
116H	SMALL ANIMALS	EPOXY	EPOXY 6"	FRP	FRP	FRP	FRP	PAINTED (3) GB	109-1/8"	NONE
116J	PUPPY CAGES	EPOXY	EPOXY 6"	FRP	FRP	FRP	FRP	PAINTED (3) GB	109-1/8"	NONE
116K	PLAY AREA	EPOXY	EPOXY 6"	FRP	FRP	FRP	FRP	PAINTED (3) GB	109-1/8"	NONE
116L	STAIR	PAINT (5)	PAINT (5)	NA	NA	NA	NA	NA	NA	NA
116M	STAIR	PAINT (5)	PAINT (5)	NA	NA	NA	NA	NA	NA	NA
117A	VET TECH CORR	LVT PLANK	6" VB	FRP	PAINT (3)	PAINT (3)	PAINT (3)	EXIST'G PAINT (1)	109-1/8"	(2) 90d
117B	PET ISOLATION	EPOXY	EPOXY 6"	FRP	FRP	FRP	FRP	EX'G PT(1) & (Z)	109-1/8"	NONE
117C	SURGERY PREP	LVT PLANK	6" VB	PAINT (3)	PAINT (3)	PAINT (3)	PAINT (3)	NEW ACT	109-1/8"	NONE
117D	SURGERY SUITE	LVT PLANK	6" VB	PAINT (3)	PAINT (3)	PAINT (2)	PAINT (3)	NEW ACT	109-1/8"	NONE
117E	VET/TECH OFFICE	LVT PLANK	6" VB	PAINT (3)	PAINT (3)	PAINT (3)	PAINT (3)	NEW ACT	109-1/8"	NONE
117F	EXAM ROOM	LVT PLANK	6" VB	PAINT (3)	PAINT (3)	PAINT (2)	PAINT (3)	NEW ACT	109-1/8"	(1) 90d
118	SHELTER ATTENDANT	LVT PLANK	6" VB	PAINT (4)	PAINT (4)	PAINT (4)	PAINT (4)	EXIST'G PAINT (1)	109-1/8"	NONE
119	PET STORE / SUPPLIES	NEW CER TILE	NEW 6" CER TILE	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
120	MECHANICAL RM	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
121	CORRIDOR	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
122A	FOOD PREP	NEW CER TILE	NEW 6" CER TILE	PAINT (3)	PAINT (2)	PAINT (2)	PAINT (2)	EX'G PT(1) & (Z)	109-1/8"	NONE
122B	STORAGE	LVT PLANK	6" VB	PAINT (2)	PAINT (3)	PAINT (3)	PAINT (3)	EX'G PT(1) & (Z)	109-1/8"	NONE
122C	LAUNDRY	LVT PLANK	6" VB	PAINT (3)	PAINT (3)	PAINT (3)	PAINT (3)	EX'G PT(1) & (Z)	109-1/8"	NONE
123A	TOILET	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
123B	CLOSET	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
124	STORAGE	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
125A	COMMUNITY ROOM	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	(1) 90d
125B	COMMUNITY RM ALCOVE	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	(1) 90d
126	WOMEN RR	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
127	MEN REST ROOM	EXIST'G NC	EXIST'G NC	PAINT (2)	PAINT (2)	PAINT (2)	PAINT (2)	EXIST'G PAINT (1)	109-1/8"	NONE
128	ALCOVE	NEW CER TILE	NEW 6" CER TILE	PAINT (4)	PAINT (4)	PAINT (4)	PAINT (4)	EXIST'G PAINT (1)	109-1/8"	NONE
129	CORRIDOR	NEW CER TILE	NEW 6" CER TILE	PAINT (4)	PAINT (4)	PAINT (4)	PAINT (4)	EXIST'G PAINT (1)	109-1/8"	(3) 90d
M01	OPEN	EXIST'G NC	EXIST'G NC	PAINT (4)	PAINT (4)	PAINT (4)	PAINT (4)	OPEN TO ABOVE(W)		NONE
M02	MECHANICAL	EXIST'G NC	EXIST'G NC	EX'G NC	EX'G NC	EX'G NC	EX'G NC	EX'G NC	129"	NONE
M03	MECHANICAL	EXIST'G NC	EXIST'G NC	EX'G NC	EX'G NC	EX'G NC	EX'G NC	EX'G NC	129"	NONE
M04	STORAGE	EXIST'G NC	EXIST'G NC	EX'G NC	EX'G NC	EX'G NC	EX'G NC	EX'G NC	251"	NONE
M05	STORAGE	EXIST'G NC	EXIST'G NC	EX'G NC	EX'G NC	EX'G NC	EX'G NC	EX'G NC	251"	NONE
201	CORRIDOR	EPOXY	EPOXY 6"	PAINT (3)	PAINT (3)	PAINT (3)	PAINT (3)	FRP	105-1/2"	NONE
202	DOG BOARDING	EPOXY	EPOXY 6"	EP/PT (3)	EP/PT (3)	EP/PT (3)	EP/PT (3)	FRP	121-1/2"	(4) 90d
203	UTILITY/STORAGE	EPOXY	EPOXY 6"	PAINT (3)	PAINT (3)	PAINT (3)	PAINT (3)	FRP	121-1/2"	(2) 90d
E-01	(COVERED) STAFF BREAK AREA	NA	NA	NA	NA	NA	NA	STEEL SOFFIT	NA	NONE
E-02	COVERED OUTSIDE PLAY AREA	NA	NA	NA	NA	NA	NA	STEEL SOFFIT	NA	NONE
E-03	ENTRY CANOPY	EX'G CONCRETE NC	NA	NA	NA	NA	NA	NA	NA	NONE

INTERIOR FINISH LEGEND & NOTES

EXISTING CEILINGS IN ALL 116 AREAS TO BE REPAIRED, TOUCHED UP & RE-PAINTED WITH (2) FINISH COATS, INCLUDING HIGH SLOPED CEILINGS.
PAINT (1): EXISTING GYP BOARD CEILING TO BE TOUCHED UP, REPAIRED, AND RE-PAINTED WITH (1) FINISH COAT
PAINT (2): EXISTING WALL TO BE TOUCHED UP, REPAIRED, AND RE-PAINTED WITH (2) FINISH COATS
PAINT (3): NEW WALL SURFACE TO RECEIVE (3) COATS FINISH PAINT: ONE PRIMER, TWO FINISH.
PAINT (4): EXISTING WALL TO BE TOUCHED UP, REPAIRED, AND RE-PAINTED WITH (2) FINISH COATS; PROVIDE CHAIR RAIL AT 38" AFF; PROVIDE DIFFERENT COLORS PAINT BELOW AND ABOVE CHAIR RAIL.
PAINT (5): NEW STEEL STAIR AND HAND-/GUARD-RAILS; FACTORY PRIME; FIELD PAINT TWO FINISH COATS.
"W" EXISTING CEILINGS IN ALL 116 AREAS TO BE PATCHED/REPAIRED & RE-PAINTED WITH (2) FINISH COATS
"X" NEW CERAMIC/PORCELAIN TILE THROUGHOUT THE AREA, WITH CUSTOM LOGO INSET; SEE DETAIL
"Y" ADD CERAMIC/PORCELAIN TILE INSET AT BREAK ROOM NEW EQUIPMENT COUNTER/CABINETS; INCLUDE TILE BASE AT EAST WALL
"Z" EXISTING CEILING TO REMAIN; PATCH & REPAIR WHERE NEW PARTITIONS ATTACH/PENETRATE.
EP/PT (3): EPOXY WALL COATING UP TO 60" AFF; CMU PAINT (PRIMER & 2 FINISH COATS) FROM 60" AFF TO CEILING.
EPOXY WALL COATING ON CMU WALLS IN DOG KENNEL ADDITION: SW LOXON SURFACER (LX01W200); (2) COATS SW CATALYZED EPOXY B73-300 SERIES
EPOXY FLOOR COATING: PREP CONCRETE FLOORS TO CSP-2; FINISH WITH (2) COATS SW ARMORSEAL 8100 WATERBASED EPOXY (SPECS 09 9600)
VINYL BASE AND CHAIR RAIL PRODUCT SELECTIONS: SEE SPECS SECTION 09 6500
CER TILE: NEW 12" X 12" CERAMIC TILE; SEE SPECS SECTION 09 3000.
REGARDING WALL PAINT COLORS:
PT (1), (2) AND (3): PROVIDE ONE COLOR AT ONE ACCENT WALL IN THESE ROOMS; ONE OTHER COLOR ON ALL OTHER WALLS
PT (4): PROVIDE ONE COLOR BELOW CHAIR RAIL AND ONE OTHER COLOR ABOVE CHAIR RAIL THROUGHOUT THESE ROOMS.
RE: FRP WALLCOVERINGS: ALLOW UP TO TWO COLORS IN ANY ROOM. ALLOW FOR A TOTAL OF UP TO (4) DIFFERENT COLORS THROUGHOUT THE JOB.
FRP MATERIAL TO BE MARLITE, STANDARD FRP; CLASS 'A'; SMOOTH SURFACE; COLORS TO BE SELECTED FROM MFR'S STANDARDS.



NEW 1st FLOOR PLAN – AREA 'B'
SCALE: 3/16" = 1'-0"



PARTITION/WALL TYPES
ALL GYP BOARD SHEATHING ON NEW PARTITIONS: 5/8" TYPE X.
NO SCALE

SHEET NOTES:

1. SEE SLAB PLAN SHEET A-1.4 FOR DETAILS ON NEW OR REPLACED CONCRETE SLABS. SEE ALSO STRUCTURAL ENGINEER'S PLANS, DETAILS AND SPEC'S.
2. SEE FIXTURE/EQUIPMENT PLAN FOR INFORMATON RE: OWNER AND GC SUPPLIED ITEMS. (A-10.0 & A-10.1)

SEE ALSO SPEC'S SECTIONS:
06 4100 ARCH'L WOOD CASEWORK
09 2116 GYPSUM BOARD ASSEMBLIES
12 3600 COUNTERTOPS
DIVISION 9 FINISHES
DIVISION 10 SPECIALTIES

SEE ALSO:
DOOR SCHEDULE A-9.0
WINDOW SCHEDULE A-9.2

KEYED NOTES:

2. NEW TRENCH DRAIN CAST INTO NEW CONCRETE SLAB.
3. PRE-FINISHED METAL COPING AT TOP OF PARTIAL HEIGHT, EXPOSED CMU END WALLS: +/- 28 LF REQUIRED.
4. RE-INSTALL EXISTING FENCE TO MEET NEW EXTERIOR CORRIDOR WALL.
5. INSTALL 1/2" MARINE PLYWOOD FROM FLOOR TO 36" AFF ON WET SIDE OF THIS PARTITION.

LEGEND:

- KEYED NOTE
- DOOR NUMBER
- WINDOW NUMBER
- P-1 — PARTITION TYPE
- NEW DOOR/OPENING
- EXISTING DOOR/OPENING

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MO Lic: #007402

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ARCHITECTURAL Design & Consulting
po box 605
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mo 63019
(636) 933-0007
corporate authority certificate #: 2006007290

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JEFFERSON CO. ELECTRIC 2017
BLD'G CODE(S)

NEW FIRST FLOOR PLAN AREA 'B'
INTERIOR FINISH SCHEDULE
SHEET TITLE

SHEET NUMBER
A-1.2

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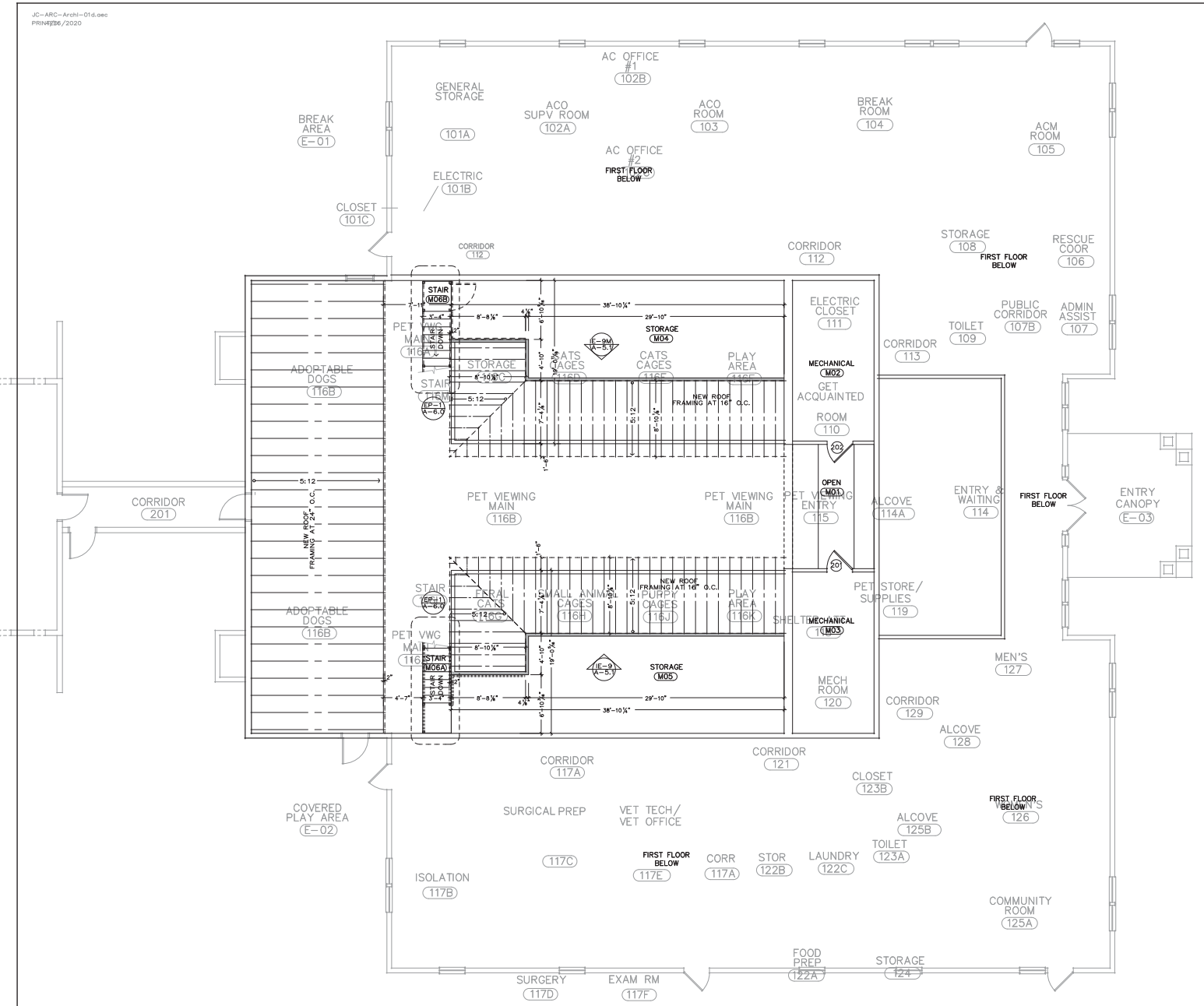

NEW MEZZANINE PLAN
SCALE: 3/16" = 1'-0"

SHEET NOTES:

1. SEE ALSO STRUCTURAL ENGINEER'S PLANS, DETAILS AND SPEC'S.
2. FRAMING FOR INTERIOR ROOF ASSEMBLY MAY BE HAND FRAMED AT 16" OC OR MANUFACTURED WOOD TRUSSES AT 24" AT CONTRACTOR'S OPTION.

SEE ALSO SPEC'S SECTIONS:
05 5100 STEEL STAIRS
06 1753 SHOP-FABRICATED WOOD TRUSSES
07 4113 METAL ROOF PANELS

KEYED NOTES:

NONE THIS DRAWING SHEET

LEGEND:

- KEYED NOTE
- DOOR NUMBER
- WINDOW NUMBER
- P-1 PARTITION TYPE

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NEW MEZZANINE FLOOR PLAN
SHEET TITLE

SHEET NUMBER
A-1.3
6 OF 21

JC-ARC-Archi-01d.aec
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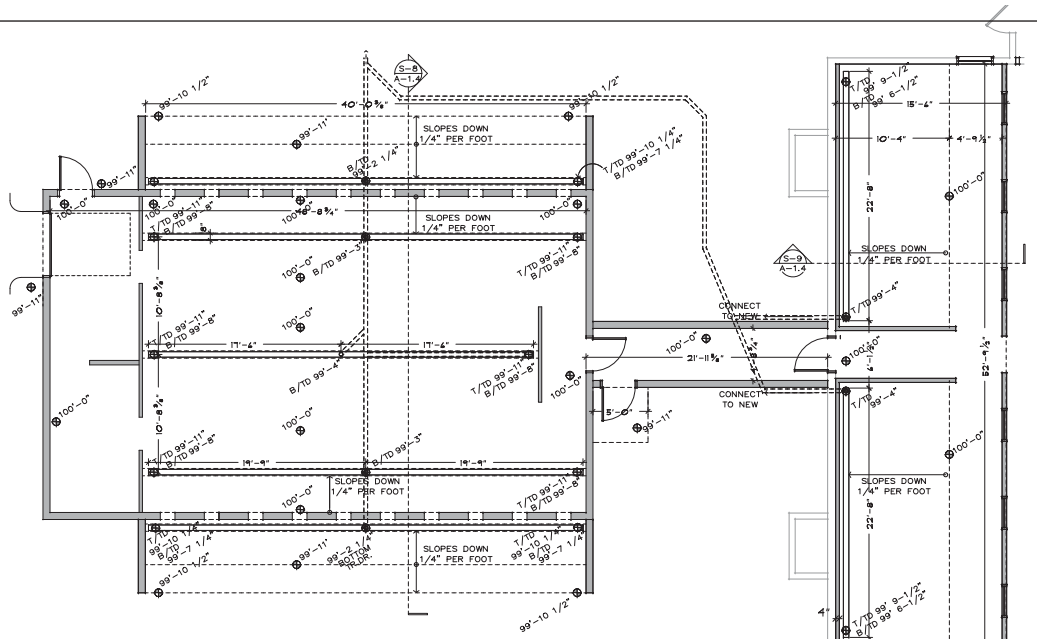
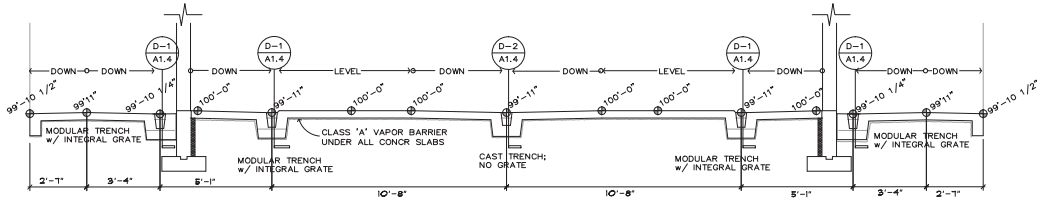
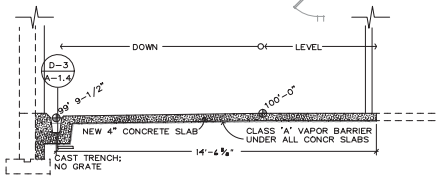


SLAB PLAN
SCALE: 3/16" = 1'-0"



S-8 A 1.4 SLAB SECTION
SCALE: 3/8" = 1'-0"



S-9 A-1.4 SLAB SECTION
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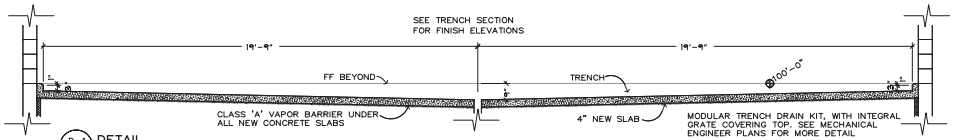

D-1 A-1.4 DETAIL
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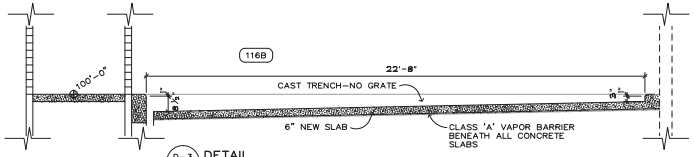

D-3 A-1.4 DETAIL
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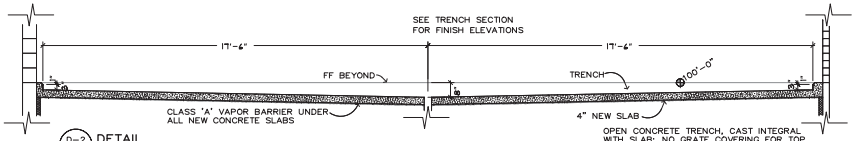

D-2 A-1.4 DETAIL
SCALE: 3/8" = 1'-0"

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SEE ALSO SPEC'S SECTIONS:
03 3000 CONCRETE

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SLAB PLAN AND DETAILS
SHEET TITLE

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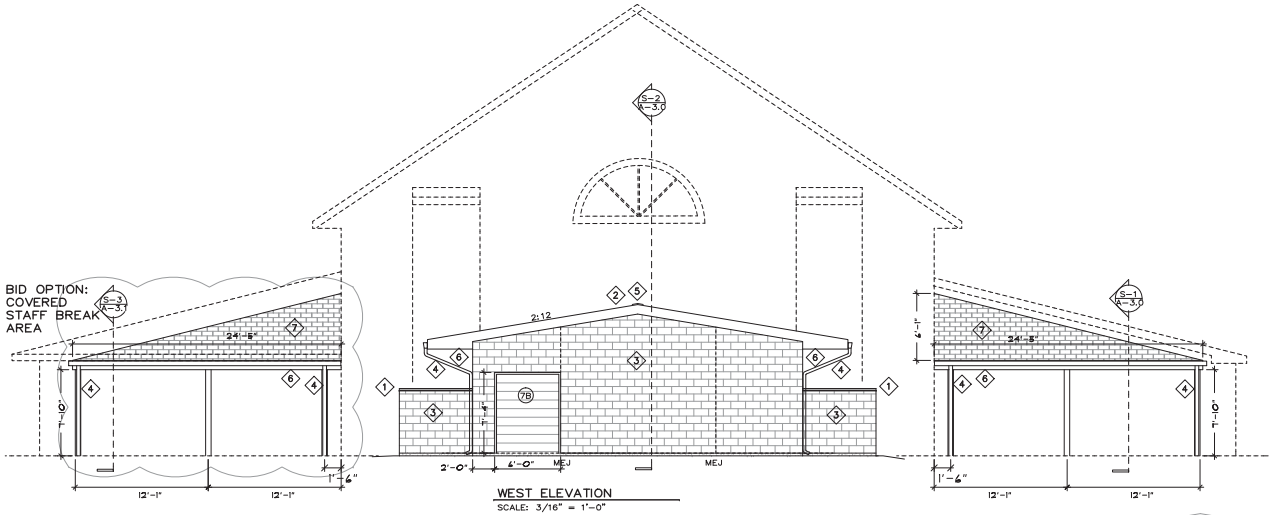
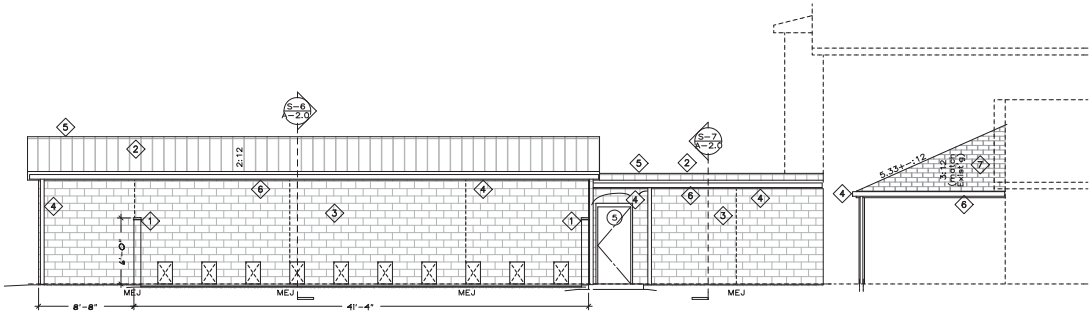
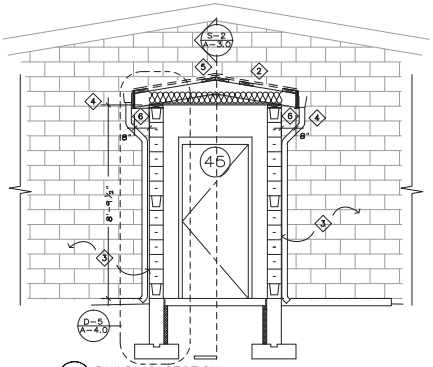


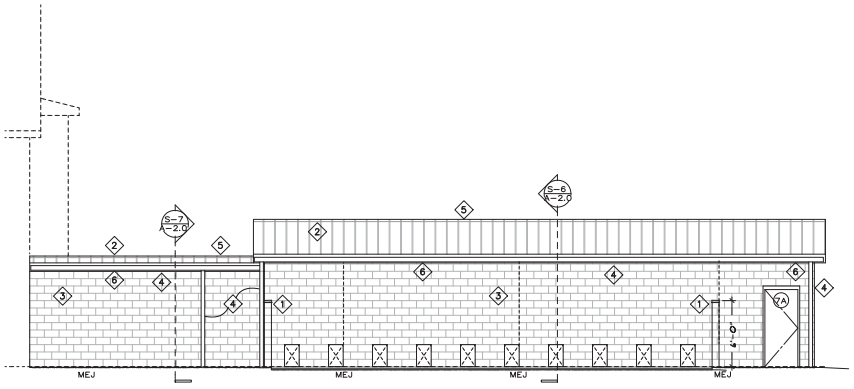
WEST ELEVATION
SCALE: 3/16" = 1'-0"



SOUTH ELEVATION
SCALE: 3/16" = 1'-0"



BUILDING SECTION
SCALE: 3/8" = 1'-0"



NORTH ELEVATION
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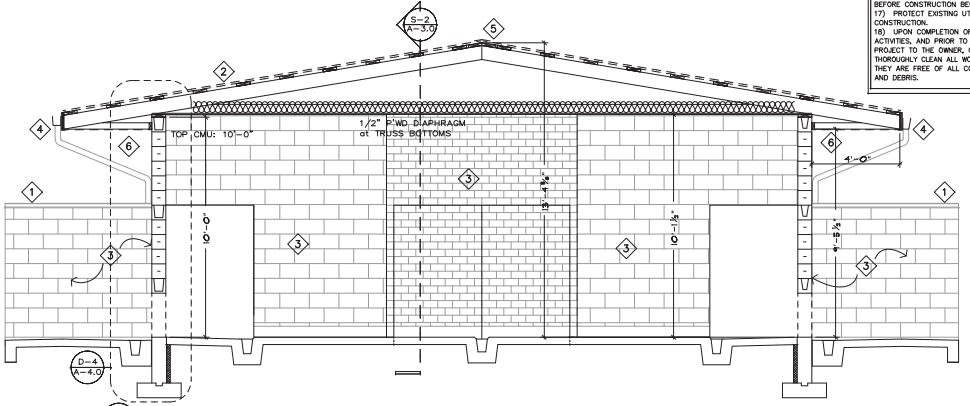

BUILDING SECTION
SCALE: 3/8" = 1'-0"

SHEET NOTES:

1. SEE ALSO STRUCTURAL ENGINEER'S PLANS, DETAILS AND SPEC'S.

SEE ALSO SPEC'S SECTIONS:
03 3000 CONCRETE
04 2000 MASONRY
07 2123 LOOSE FILL INSULATION
07 4113 METAL ROOF PANELS
07 6200 SHEET METAL FLASHING & TRIM
07 7100 ROOF SPECIALTIES

KEYED NOTES:

1. PRE-FINISHED METAL COPING (SPECS 07 6200)
2. PRE-FINISHED STEEL (STRUCTURAL ROOFING (SPECS 07 4113)
3. PRIME & PAINT ALL EXPOSED EXTERIOR CMU (SPECS 09 9113) SEE INTERIOR FINISH SCHEDULE FOR EPOXY COATINGS VS ALKYD PAINT FOR INTERIOR CMU.
4. PRE-FINISHED STEEL, RECTANGULAR GUTTERS AND DOWNSPOUTS (SPECS 07 6200)
5. RIDGE VENT
6. VENTED SOFFIT (CONCEALED VENT; SPEC'S 07 6200; STEALTH VENT BY ROLLEX)
7. NEW ASPHALT SHINGLES ON P'WD SHEATHING at NEW ROOF (SEE SPECS 07 3113)

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PLAN STATUS

4/15/2020

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Architect
MO Lic: #007402

BACON
COMMERCIAL
DESIGN LLC

ARCHITECTURAL
Design & Consulting

po box 605
crystal city
mo 63019
(636) 933-0007

corporate authority
certificate #: 2006007290

Jefferson County, Missouri
Animal Resource Center

OWNER

Remodeling and Addition
ANIMAL RESOURCE CENTER
4848 State Rte 30
House Springs, MO 63051

COMMISSION

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INT'L PLUMB'G CODE 2015
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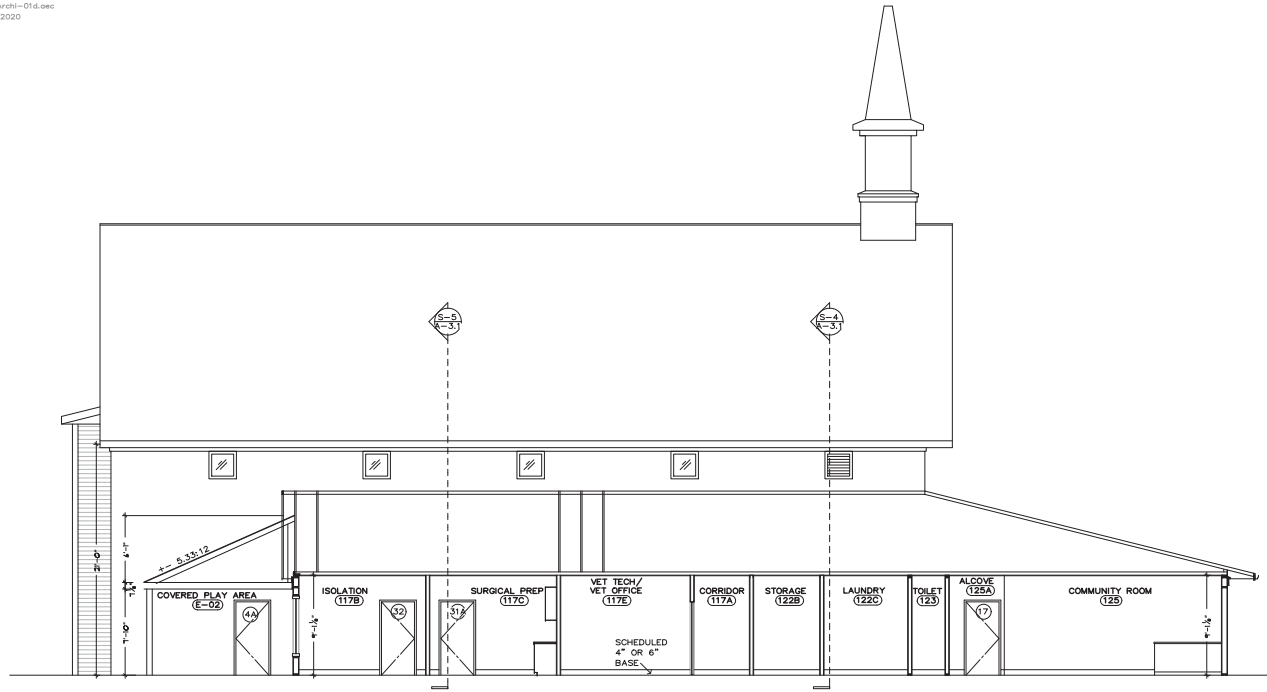
BLD'G CODE(S)

EXTERIOR ELEVATIONS-
NEW ADDITION
SECTIONS-
NEW ADDITION

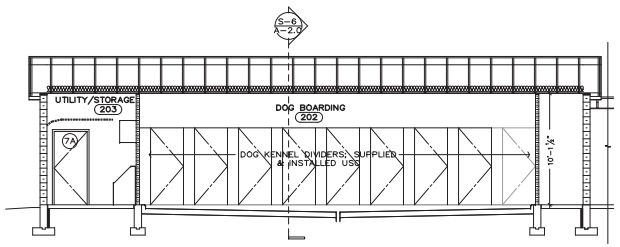
SHEET TITLE

SHEET NUMBER
A-2.0
8 OF 21

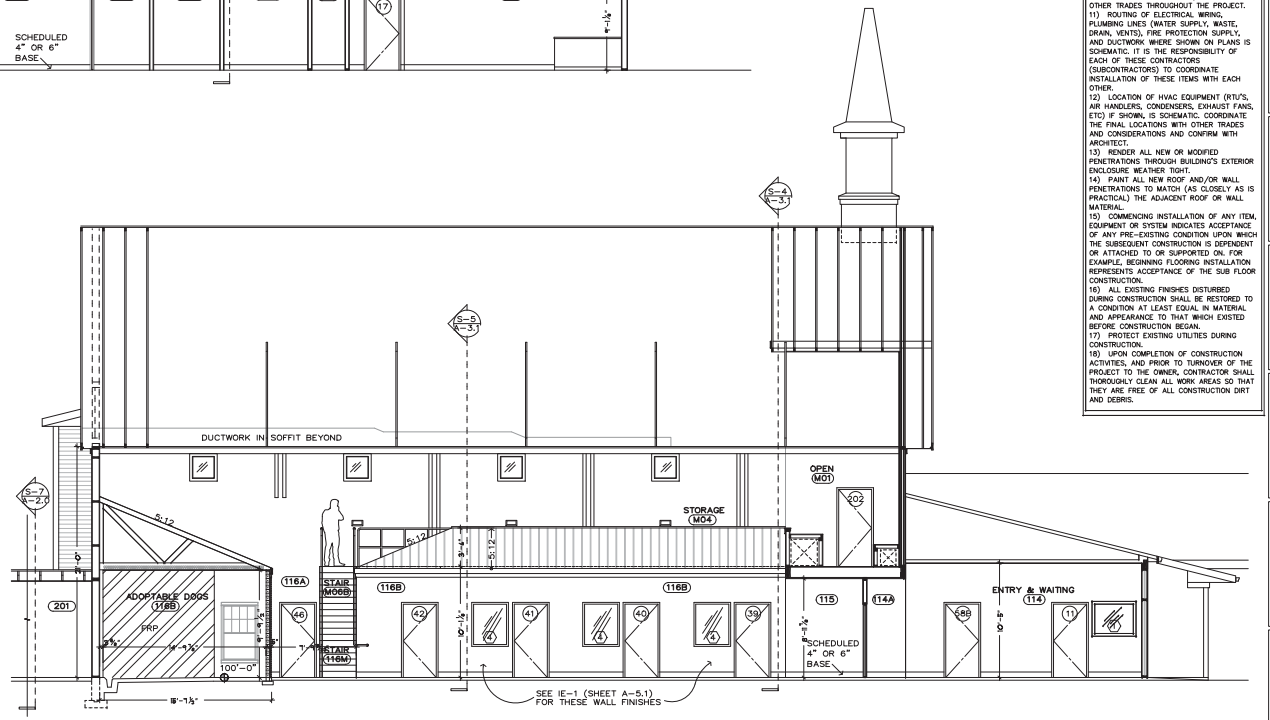
JC-ARC-Archi-01d.aec
PRINTED: 4/16/2020



S-1 / A-1.1 BUILDING SECTION
SCALE: 3/16" = 1'-0"



S-2 / A-1.1 / A-1.2 BUILDING SECTION
SCALE: 3/16" = 1'-0"



LEGEND:

① DOOR NUMBER – SEE SCHEDULE SHEET A-9.0

① WINDOW NUMBER – SEE SCHEDULE SHEET A-9.2

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BUILDING SECTIONS

SHEET TITLE

SHEET NUMBER
A-3.0

JC-ARC-Archi-01d.aec
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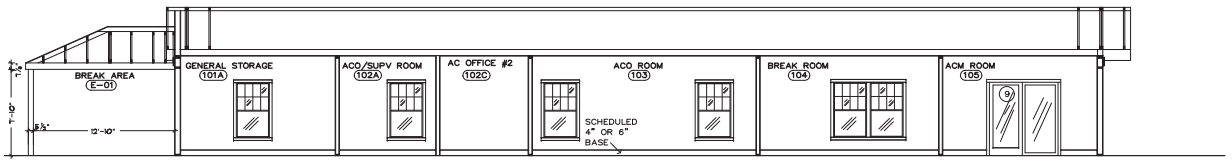

S-3 / A-1.1 BUILDING SECTION
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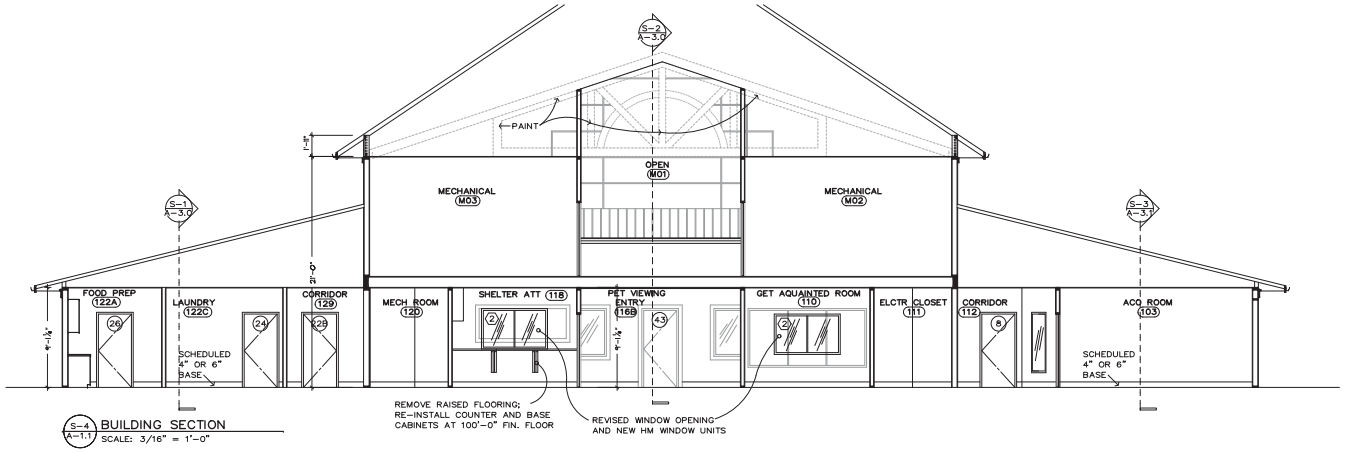
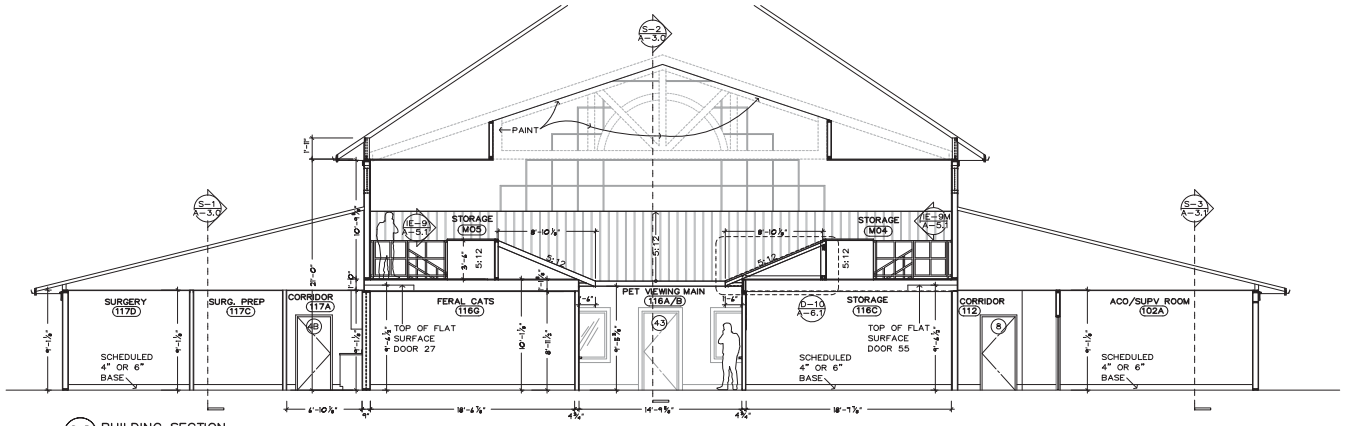


S-4 / A-1.1 BUILDING SECTION
SCALE: 3/16" = 1'-0"



S-5 / A-1.1 BUILDING SECTION
SCALE: 3/16" = 1'-0"

LEGEND:

- (1) DOOR NUMBER – SEE SCHEDULE SHEET A-9.0
- (1) WINDOW NUMBER – SEE SCHEDULE SHEET A-9.2

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SHEET TITLE

SHEET NUMBER
A-3.1

JC-ARC-Archi-01d.aec
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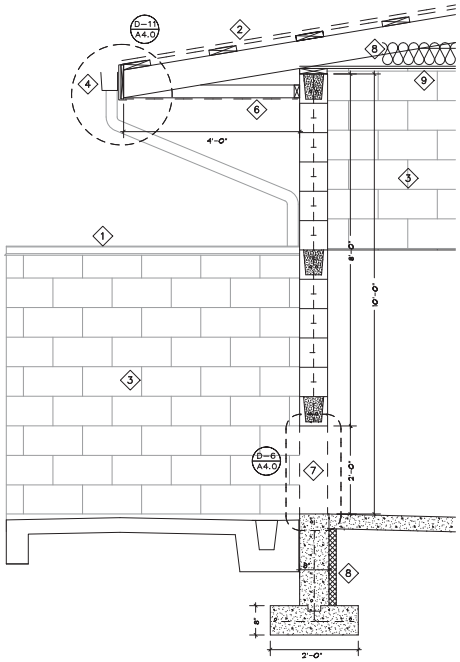
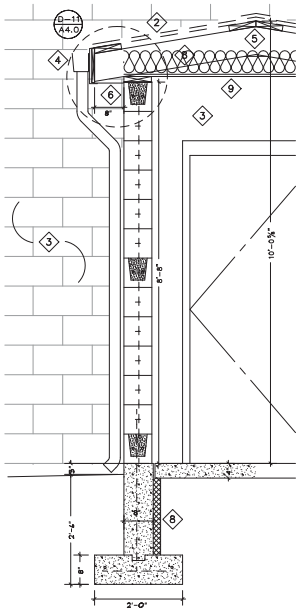
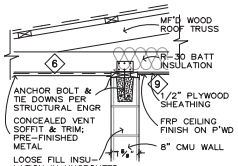


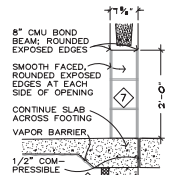
D-4 / A2.0 DETAIL—EXT. WALL
SCALE: 3/4" = 1'-0"



D-5 / A2.0 DETAIL—EXT. WALL
SCALE: 3/4" = 1'-0"



D-11 / A-4.0 CMU WALL—ROOF CONNECTION
SCALE: 3/4" = 1'-0"



D-6 / A-4.0 TYP DETAIL AT DOG RUN OPENINGS
SCALE: 3/4" = 1'-0"

SHEET NOTES:

1. SEE ALSO STRUCTURAL ENGINEER'S PLANS, DETAILS & SPECIFICATIONS.
2. PROVIDE LOOSE FILL INSULATION IN UN-GROUTED CMU CORES IN EXTERIOR WALLS.

SEE ALSO SPEC'S SECTIONS:
03 3000 CAST IN PLACE CONCRETE
04 2000 UNIT MASONRY
07 2100 THERMAL INSULATION
07 2123 LOOSE FILL INSULATION
07 4113 METAL ROOF PANELS
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DIVISION 9 FINISHES

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5. RIDGE VENT
6. VENTED SOFFIT (CONCEALED VENT; SPEC'S 07 6200; STEALTH VENT BY ROLLEX)
7. 24"x16" OPENING IN EXTERIOR CMU WALL FOR ACCESS TO EXTERIOR DOG RUN
8. INSULATION
9. FRP FINISHED CEILING ON PLYWOOD SHEATHING (MECHANICALLY FASTENED & ADHERED)

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PLAN STATUS

4/15/2020

Steven J. Bacon
Architect
MO Lic: #007402

BACON COMMERCIAL DESIGN LLC
ARCHITECTURAL Design & Consulting
po box 605
crystal city
mo 63019
(636) 933-0007
corporate authority certificate #: 2006007290

Jefferson County, Missouri
Animal Resource Center

OWNER

Remodeling and Addition
ANIMAL RESOURCE CENTER
4848 State Rte 30
House Springs, MO 63051

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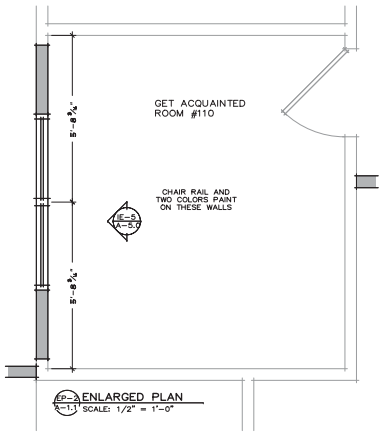
BLD'G CODE(S)

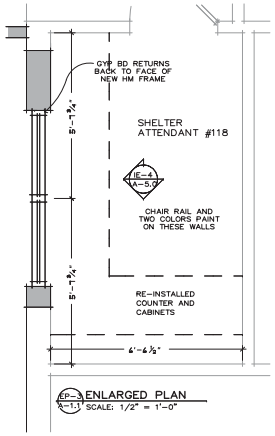
EXTERIOR WALL DETAILS

SHEET TITLE

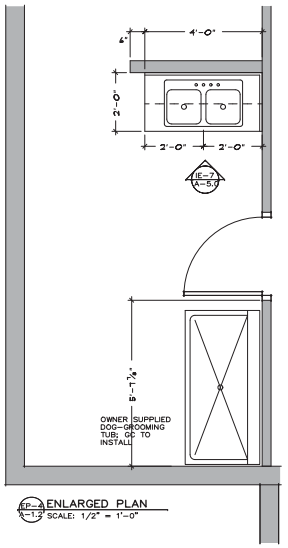
SHEET NUMBER
A-4.0
11 OF 21



EP-2 / A-1.1 ENLARGED PLAN
SCALE: 1/2" = 1'-0"



EP-3 / A-1.1 ENLARGED PLAN
SCALE: 1/2" = 1'-0"



EP-4 / A-1.2 ENLARGED PLAN
SCALE: 1/2" = 1'-0"

SHEET NOTES:

SEE FINISH SCHEDULE SHEET A-1.2

HPL: HIGH PRESSURE PLASTIC LAMINATE

SEE ALSO SPEC'S SECTIONS:
06 4100 ARCHITECTURAL CASEWORK
07 9200 JOINT SEALANTS
09 6500 RESILIENT FLOORING (BASE & CHAIR RAIL)
09 7720 FIBERGLASS REINFORCED PANELING
09 9123 INTERIOR PAINTING
12 3600 COUNTERTOPS (SOLID SURFACE)

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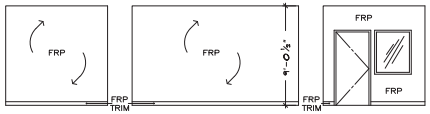
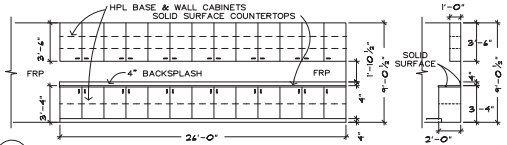
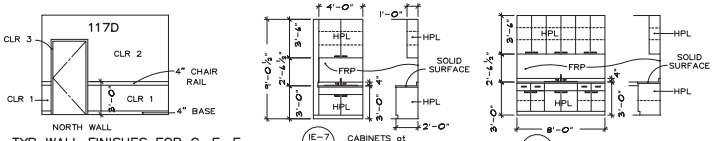


NEW END WALL (2) NEW SIDE WALLS NEW END WALL

TYPICAL 116C-116K



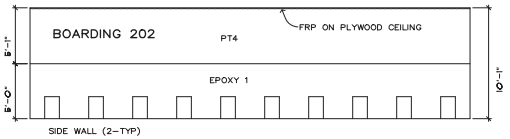
IE-6 / A-1.1 CABINETS AT 117A: 6-1/2 48" CABINETS
(2) ADJ'BLE SHELVES IN WALL CAB'S; (1) ADJ'BLE SHELF IN BASE CAB'S



IE-7 / A-1.1 CABINETS at UTILITY #202

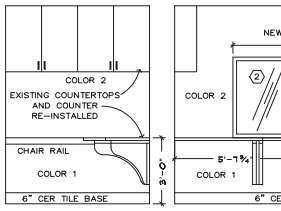
IE-8 / A-1.1 CABINETS at SURGICAL PREP #117C

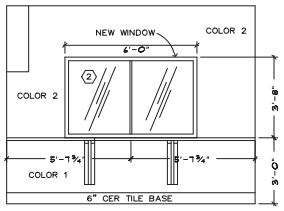
TYP WALL FINISHES FOR C, E, F, 117 A (2 SEGMENTS), and 102 B/C



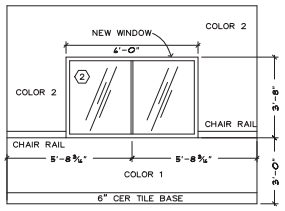
SIDE WALL (2-TYP)

INTERIOR ELEVATIONS
SCALE: 3/16" = 1'-0"





IE-4 / A-5.0 INTERIOR ELEVATION RM 118
SCALE: 3/8" = 1'-0"



IE-5 / A-5.0 INTERIOR ELEVATION RM 110
SCALE: 3/8" = 1'-0"

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4/15/2020

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Architect
MO Lic: #007402

BACON
COMMERCIAL
DESIGN LLC

ARCHITECTURAL
Design & Consulting

po box 605
crystal city
mo 63019
(636) 933-0007

corporate authority
certificate #: 2006007290

Jefferson County, Missouri

Animal Resource Center

OWNER

Remodeling and Addition
ANIMAL
RESOURCE CENTER
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House Springs, MO
63051

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INT'L PLUMB'G CODE 2015
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JEFFERSON CO. ELECTRIC 2017

BLD'G CODE(S)

ENLARGED PLANS

INTERIOR FINISH ELEVATIONS

SHEET TITLE

SHEET NUMBER
A-5.0

JC-ARC-Archi-01d.aec
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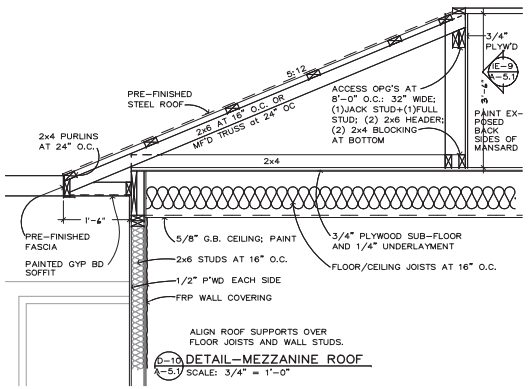
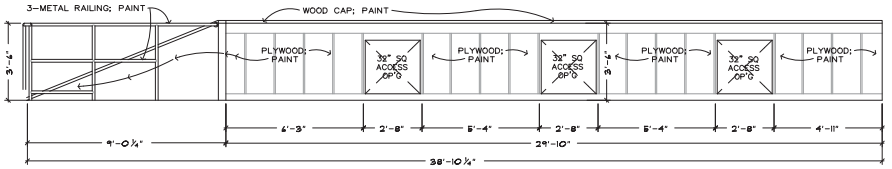


D-10 A-5.1 DETAIL-MEZZANINE ROOF
SCALE: 3/4" = 1'-0"



IE-9 A-5.1 INTERIOR ELEVATION: BACK SIDE OF FAUX ROOF
SCALE: 3/8" = 1'-0"
2 1 0 2 6

SHEET NOTES:

SEE FINISH SCHEDULE SHEET A-1.2

SEE ALSO SPEC'S SECTIONS:
05 5100 METAL STAIRS
06 2000 FINISH CARPENTRY
07 4642 VINYL AND POLYMER SIDING
07 4646 FIBER-CEMENT SIDING
07 9200 JOINT SEALANTS
08 1113 HOLLOW METAL DOORS & FRAMES
08 1416 FLUSH WOOD DOORS
09 7720 FIBERGLASS REINFORCED PANELING
09 9123 INTERIOR PAINTING

KEYED NOTES

1. PRE-FINISHED METAL ROOFING PANELS & ROOF EDGE TRIM; SPECS 07 4113
2. FIBER CEMENT HORIZONTAL SIDING; SPECS 07 4646
3. COMPOSITE TRIM: CERTAINTEED 'CERTATRIM' PVC J-POCKET TRIM BOARDS; PAINT; 4" NOM X 5/4"
4. VINYL SHINGLE SIDING: CEDAR IMPRESSIONS INDIVIDUAL 5" SAWMILL SHINGLES; SPECS 07 4640
5. BASE TRIM: CERTAINTEED 'CERTA-TRIM' PVC J-POCKET TRIM BOARDS; PAINT; 8" NOM X 5/4"

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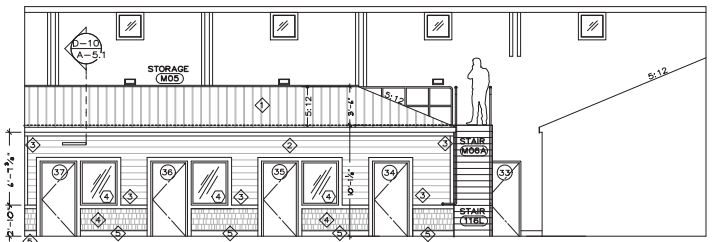
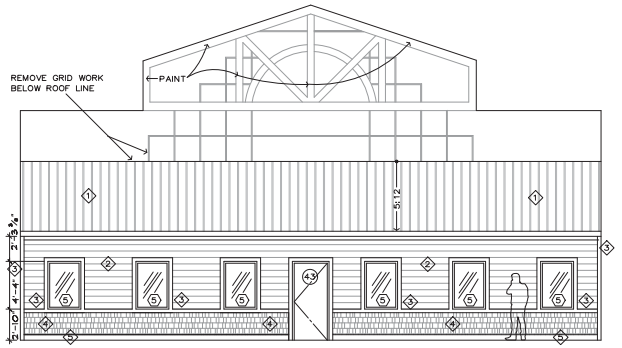
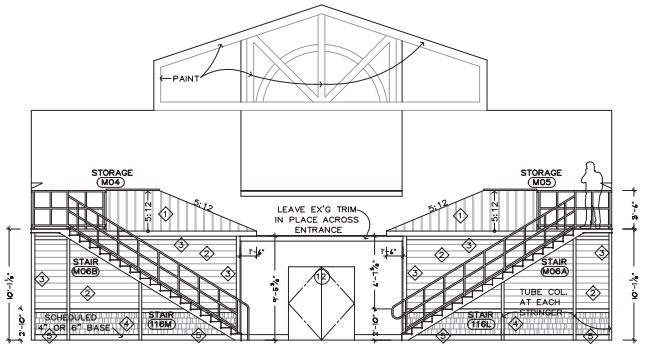


IE-1 A-1.1 INTERIOR ELEVATION
SCALE: 3/16" = 1'-0"

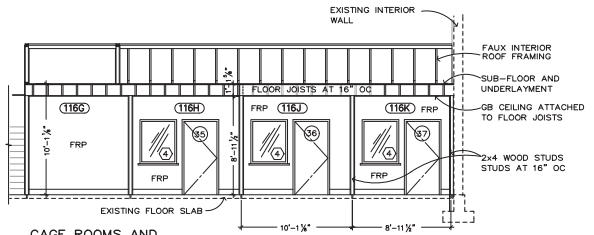
IE-1B A-1.1 INTERIOR ELEVATION
SIMILAR, MIRRORED



IE-2 A-1.1 INTERIOR ELEVATION
SCALE: 3/16" = 1'-0"



IE-3 A-1.1 INTERIOR ELEVATION
SCALE: 3/16" = 1'-0"



S-10 A-1.1 CAGE ROOMS AND MEZZANINE FLOOR SECTION
SCALE: 3/16" = 1'-0"

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COMMISSION

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INT'L PLUMB'G CODE 2015
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BLD'G CODE(S)

INTERIOR FINISH ELEVATIONS AND DETAILS
SHEET TITLE

SHEET NUMBER
A-5.1
13 OF 21

JC-ARC-Archi-01d.dwg
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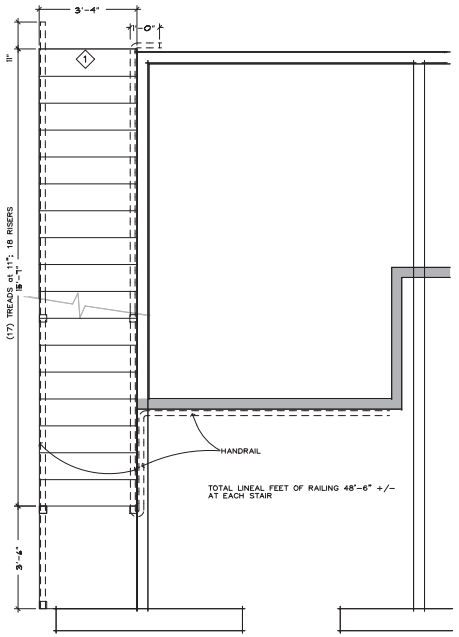
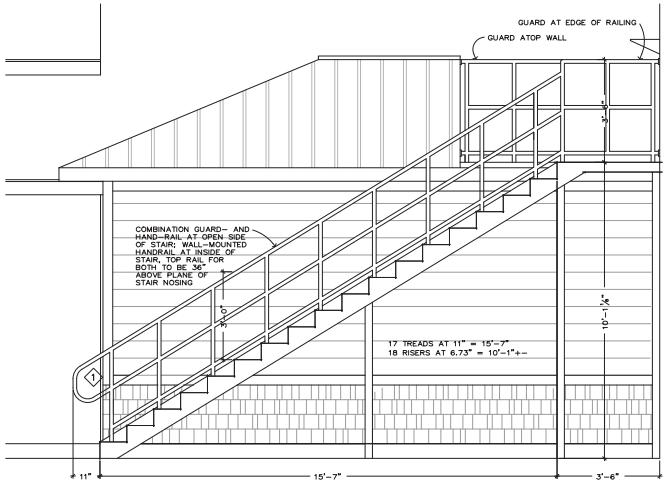


EP-1 / A-6.0 ENLARGED PLAN
SCALE: 1/2" = 1'-0"

STAIR 116L/M06A
(STAIR 116M/M06B MIRRORED)



STAIR DETAIL
SCALE: 1/2" = 1'-0"

STAIR 116L/M06A
(STAIR 116M/M06B MIRRORED)

SHEET NOTES:

STEEL STAIRS (2):
DELEGATED DESIGN. SUPPLIER TO PROVIDE STRUCTURAL ENGINEERED PLANS WITH FABRICATION DETAILS PER LOCAL AUTHORITY HAVING JURISDICTION, PRIOR TO BEGINNING WORK.

SEE SPEC'S:
05 5100 METAL STAIRS (INCLUDES HAND- AND GUARD-RAILS)
10 1400 SPECIALTIES (NO ENTRY SIGNS)

KEYED NOTES

1 PROVIDE ONE VISUAL BARRIER SIGN KIT AT BASE OF EACH STAIR; TWO REQUIRED.

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12) LOCATION OF HVAC EQUIPMENT (RTU'S, AIR HANDLERS, CONDENSERS, EXHAUST FANS, ETC) IF SHOWN, IS SCHEMATIC. COORDINATE THE FINAL LOCATIONS WITH OTHER TRADES AND CONSIDERATIONS AND CONFIRM WITH ARCHITECT.
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PLAN STATUS

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Steven J. Bacon
Architect
MO Lic: #007402

BACON
COMMERCIAL DESIGN LLC
ARCHITECTURAL Design & Consulting
po box 605
crystal city
mo 63019
(636) 933-0007
corporate authority certificate #: 2006007290

Jefferson County, Missouri
Animal Resource Center
OWNER

Remodeling and Addition
ANIMAL RESOURCE CENTER
4848 State Rte 30
House Springs, MO 63051
COMMISSION

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INT'L PLUMB'G CODE 2015
NATIONAL ELECTRICAL CODE 2014
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BLD'G CODE(S)

STEEL STAIR, GUARD/HAND-RAILS
SHEET TITLE

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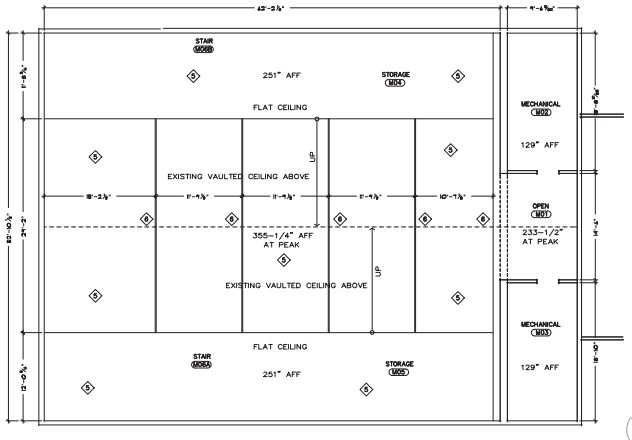
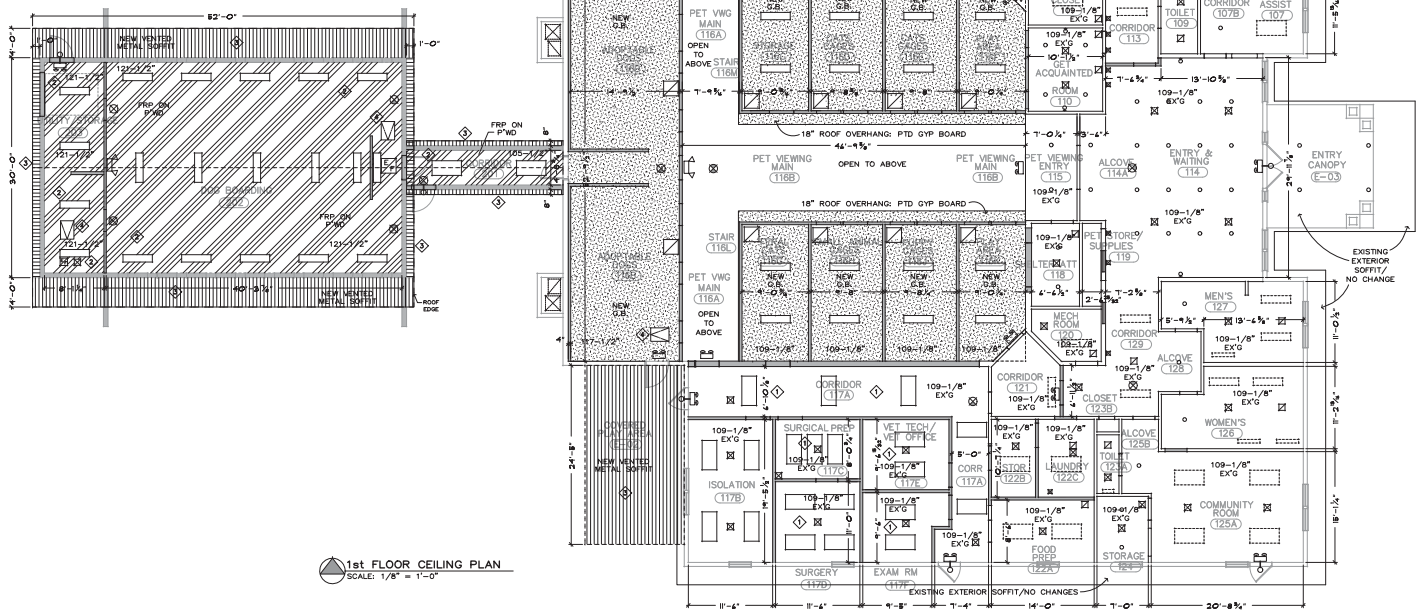


MEZZANINE CEILING PLAN
SCALE: 1/8" = 1'-0"



1st FLOOR CEILING PLAN
SCALE: 1/8" = 1'-0"

SHEET NOTES:

1. OPEN AREA ABOVE ALL 116 ROOMS: CEILING TO BE PATCHED/REPAIRED, PREPPED AND RE-PAINTED. SEE FINISH SCHEDULE A-1.2.
2. PATCH/REPAIR, PREPARE AND RE-PAINT ANY CEILING SURFACES DISRUPTED BY WALL/PARTITION DEMOLITION/REMOVAL.
3. SEE MEP PLANS FOR CEILING FIXTURE LOCATIONS. ADVISE ARCHITECT OF ANY CONFLICTS OR INCONSISTENCIES.

SEE SPEC'S:
08 3100 ACCESS DOORS AND PANELS
09 7720 FIBERGLASS REINFORCED PANELS
09 9123 INTERIOR PAINTING

LEGEND

- NEW LIGHT
- NEW EXHAUST FAN
- NEW SUPPLY DIFFUSER
- EXISTING LIGHTS
- EXISTING SUPPLY AIR DUCT
- EXISTING RETURN AIR DUCT
- NEW EXIT SIGN, DIRECTIONAL; WITH 90-MINUTE BATTERY BACKUP
- NEW COMBINATION EXIT SIGN & EMERGENCY LIGHT, WITH REMOTE HEAD TO LIGHT EXTERIOR OF EXIT PATH; with 90-MINUTE BATTERY BACKUP

KEYED NOTES:

1. REPAIR CEILING WHERE EXISTING WALLS WERE REMOVED.
2. FRP ADHERED & MECHANICALLY FASTENED TO PLYWOOD DIAPHRAGM SHEATHING AT BOTTOM CHORD OF WOOD ROOF TRUSSES
3. PRE-FINISHED STEEL SOFFIT; CONCEALED VENT TYPE.
4. CEILING ACCESS: PROVIDE 22"x30" CLOSEABLE ACCESS HATCH BETWEEN ADJACENT TRUSSES or FRAMING
5. PATCH/REPAIR, PREP AND RE-PAINT HIGH CEILINGS, SLOPED AND FLAT
6. PRIME AND RE-PAINT (ONE FINISH COAT) ALL EXPOSED WOOD TRUSSES

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FIRST FLOOR AND MEZZANINE R. CEILING PLAN

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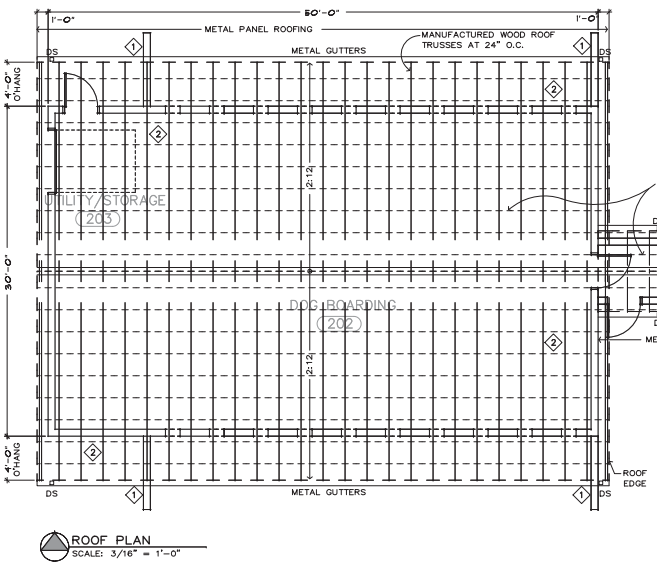
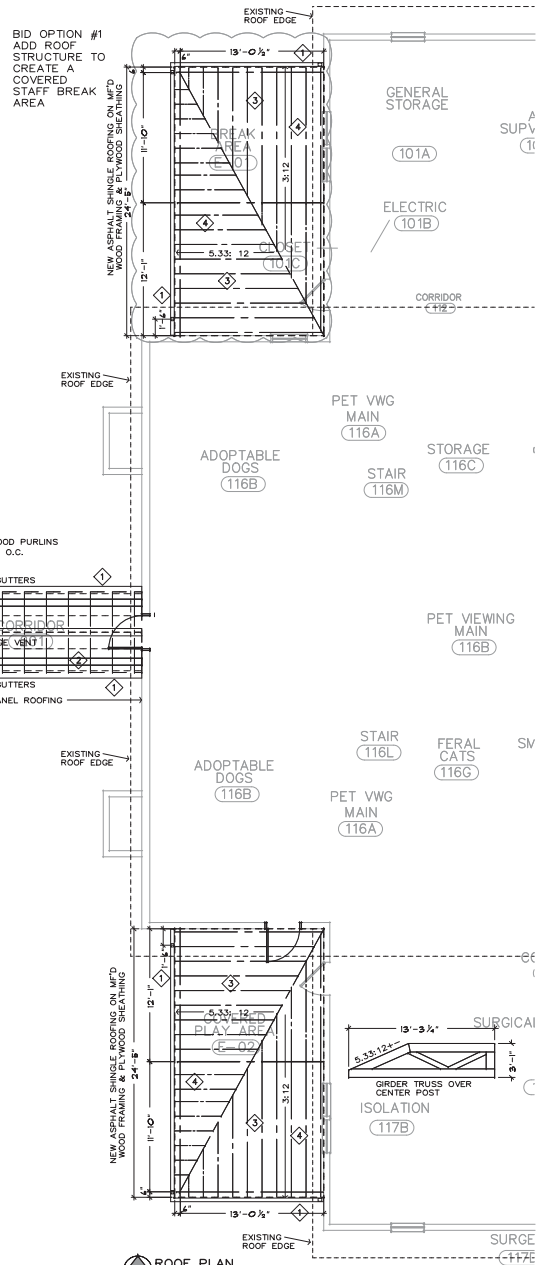


ROOF PLAN
SCALE: 3/16" = 1'-0"

BID OPTION #1
ADD ROOF STRUCTURE TO CREATE A COVERED STAFF BREAK AREA



ROOF PLAN
SCALE: 3/16" = 1'-0"

SHEET NOTES:

ROOF/ATTIC VENTING
CONCEALED VENT SOFFIT AND RIDGE VENTS: MINIMUM NFVA 1/150th OF TOTAL ROOF AREA REQUIRED.

SEE ALSO SPEC'S SECTIONS:
06 1000 ROUGH CARPENTRY
16 1753 SHOP FABRICATED TRUSSES
07 3113 ASPHALT SHINGLES
07 4113 METAL ROOFING PANELS
07 6200 SHEET METAL FLASHING & TRIM

SEE ALSO STRUCTURAL ENGINEER'S PLANS NOTES AND DETAILS.

KEYED NOTES:

1. PRE-FINISHED METAL GUTTERS, TRIM SPEC'S 07 6200
2. METAL ROOFING PANELS, ON 2x PURLINS & MF'D WOOD ROOF TRUSSES SPEC'S 07 4113
3. ASPHALT SHINGLES SPEC'S 07 3113
4. NEW WOOD ROOF FRAMING: HAND FRAMED RAFTERS at 16" OC. OR MF'D TRUSSES at 24" O.C.; AT CONTRACTOR'S OPTION

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ROOF PLAN
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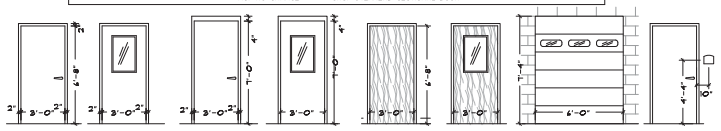
DOOR & HARDWARE SCHEDULE

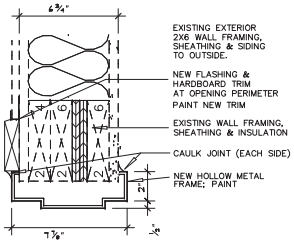
MK	SIZE	RM	INT/EXT	TYPE	WALL	H-J	PANIC	CLOSER	STOP	FUNCTION	SIGNAGE	REMARKS
1	3'-0x6'-8 (2)	114	EXT		EXISTING FRAME WALL	NA	YES	YES	YES		NONE	EXISTING
2	3'-0"x6'-8"	125	EXT		EXISTING FRAME WALL	NA	YES	YES	YES	ENTRY	NONE	EXISTING; ADD E.A.C.
3	3'-0"x6'-8"	117A	EXT		EXISTING FRAME WALL	NA	YES	YES	YES	ENTRY	NONE	EXISTING; ADD E.A.C.
4A	3'-0"x6'-8"	116B	EXT	HM IG	EXISTING FRAME WALL	1	YES	YES	YES	ENTRY	NONE	E.A.C.
4B	3'-0"x6'-8"	116B	EXT		EXISTING FRAME WALL	NA	YES	YES	YES	ENTRY	NONE	EXISTING; ADD E.A.C.
5	3'-0"x7'-0"	201	EXT	HM II	8" CMU	2	YES	YES	YES	ENTRY	NONE	E.A.C.; 4" FRAME HEAD (7'-4" H CMU OPG)
6	3'-0"x7'-0"	203	INT	HM II	4" CMU	3	YES	YES	YES	PASSAGE	NONE	4" FRAME HEAD (7'-4" HIGH CMU OPG)
7A	3'-0"x7'-0"	203	EXT	HM II	8" CMU	2	YES	YES	YES	ENTRY	NONE	E.A.C.; 4" FRAME HEAD (7'-4" H CMU OPG)
7B	6'0"x7'-4"H	203	EXT	OHS	8" CMU	OHS	--	--	--	ELECTRIC REMOTE	NONE	ONE ROW GLASS; ELECTRIC MOTOR LIFT
7C	3'-0"x7'-0"	203	INT	HM II	4" CMU	3	YES	YES	YES	PASSAGE	NONE	4" FRAME HEAD (7'-4" HIGH CMU OPG)
8	3'-0"x6'-8"	112	EXT		EXISTING FRAME WALL	NA	YES	YES	YES	ENTRY	NONE	EXISTING; ADD E.A.C.
9	3'-0"x6'-8"	105	EXT		EXISTING FRAME WALL	NA	YES	YES	YES	ENTRY	NONE	EXISTING; ADD E.A.C.
10	3'-0"x6'-8"	105	INT		EXISTING FRAME WALL	NA	--	--	WALL		NONE	EXISTING
11	3'-0"x6'-8"	107B	INT		EXISTING FRAME WALL	NA				OFFICE	OFFICE	EXISTING; ADD E.A.C.
12	3'-0"x6'-8"(2)	114A	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
13	3'-0"x6'-8"	119	INT		EXISTING FRAME WALL	NA					SERVICE	EXG POCKET DOOR; NC
14	3'-0"x6'-8"	119	INT		EXISTING FRAME WALL	NA					SERVICE	EXG POCKET DOOR; NC
15	3'-0"x6'-8"	127	INT		EXISTING FRAME WALL	NA					RR	EXISTING
16	3'-0"x6'-8"	126	INT		EXISTING FRAME WALL	NA					RR	EXISTING
17	3'-0"x6'-8"	125B	INT		EXISTING FRAME WALL	NA					CONFER	EXISTING
18	3'-0"x6'-8"	123A	INT		EXISTING FRAME WALL	NA					RR	EXISTING
19	3'-0"x6'-8"	126	INT	INFILL	EXISTING FRAME WALL	NA	--	--	--		NONE	
20	3'-0"x6'-8"	124	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
21	2'-2"x6'-8"	123B	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
22A	3'-0"x6'-8"	120	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
22B	3'-0"x6'-8"	120	INT	FW I	NEW FRAME WALL	4	--	--	FLOOR	PASSAGE	SERVICE	
23	3'-0"x6'-8"	122B	INT	FW I	NEW FRAME WALL	4	--	YES	YES	STOREROOM	SERVICE	
24	3'-0"x6'-8"	122C	INT	HM I	NEW FRAME WALL	4	NO	YES	YES	STOREROOM	SERVICE	
25	3'-0"x6'-8"	122C	INT	INFILL	EXISTING FRAME WALL	NA	--	--	--		NONE	
26	3'-0"x6'-8"	122A	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
27	3'-0"x6'-8"	121	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
28	3'-0"x6'-8"	121	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
29	3'-0"x6'-8"	117F	INT	FW I	NEW FRAME WALL	4	--	--	WALL	PASSAGE	SERVICE	
30	3'-0"x6'-8"	117E	INT	FW I	NEW FRAME WALL	4	--	--	WALL	OFFICE	OFFICE	
31A	3'-0"x6'-8"	117C	INT	FW I	NEW FRAME WALL	4	YES	YES	YES	PASSAGE	SERVICE	HOLD-OPEN
31B	3'-0"x6'-8"	117D	INT	FW I	NEW FRAME WALL	4	--	--	--	PUSH PLATE	SERVICE	180 SWING; DBL ACT'G PIVOT HINGE
32	3'-0"x6'-8"	117B	INT	FW I	NEW FRAME WALL	4	YES	YES	YES	OFFICE	SERVICE	E.A.C.
33	3'-0"x6'-8"	117A	INT	FW I	NEW FRAME WALL	5	YES	YES	YES	OFFICE	NONE	E.A.C.
34	3'-0"x6'-8"	116G	INT	FW IG	NEW FRAME WALL	5	--	--	WALL	OFFICE	SERVICE	E.A.C.
35	3'-0"x6'-8"	116H	INT	FW IG	NEW FRAME WALL	8	YES	YES	YES	PASSAGE	SERVICE	
36	3'-0"x6'-8"	116J	INT	FW IG	NEW FRAME WALL	8	YES	YES	YES	PASSAGE	SERVICE	
37	3'-0"x6'-8"	116K	INT	FW IG	NEW FRAME WALL	8	YES	YES	YES	PASSAGE	SERVICE	
38	3'-0"x6'-8"	118	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
39	3'-0"x6'-8"	116F	INT	FW IG	NEW FRAME WALL	8			WALL		SERVICE	
40	3'-0"x6'-8"	116E	INT	FW IG	NEW FRAME WALL	8	YES	YES	YES	PASSAGE	SERVICE	
41	3'-0"x6'-8"	116D	INT	FW IG	NEW FRAME WALL	8	YES	YES	YES	PASSAGE	SERVICE	
42	3'-0"x6'-8"	116C	INT	FW IG	NEW FRAME WALL	8	YES	YES	YES	PASSAGE	SERVICE	
43	3'-0"x7'-0"	116B	INT	HM IIG	4" CMU	6	YES	YES	YES	OFFICE	SERVICE	4" FRAME HEAD (7'-4" HIGH CMU OPG)
44	3'-0"x6'-8"	201	INT	HM IG	EXISTING FRAME WALL	7	YES	YES	YES	PASSAGE	SERVICE	E.A.C.
45	3'-0"x7'-0"	201	INT	HM IIG	8" CMU	2	YES	YES	YES	PASSAGE	SERVICE	4" FRAME HEAD (7'-4" HIGH CMU OPG)
46	3'-0"x6'-8"	112	INT	FW IG	EXISTING FRAME WALL	9	YES	YES	YES	OFFICE	SERVICE	E.A.C.
47	3'-0"x6'-8"	112	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
48	1'-8"x6'-8"	101C	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
49	3'-0"x6'-8"	101A	INT		EXISTING FRAME WALL	NA					OFFICE	EXISTING
50	3'-0"x6'-8"	102A	INT		EXISTING FRAME WALL	NA					OFFICE	EXISTING
51	3'-0"x6'-8"	102G	INT	FW I	NEW FRAME WALL	4	--	--	WALL	OFFICE	OFFICE	
52	3'-0"x6'-8"	102B	INT	FW I	NEW FRAME WALL	4	--	--	WALL	OFFICE	OFFICE	
53	3'-0"x6'-8"	103	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
54	3'-0"x6'-8"	104	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
55	3'-0"x6'-8"	116F	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
56	3'-0"x6'-8"	111	INT		EXISTING FRAME WALL	NA					SERVICE	EXISTING
57A	3'-0"x6'-8"	108	INT	FW I	EXISTING FRAME WALL	10	--	--	WALL	PASSAGE	SERVICE	
57B	3'-0"x6'-8"	109	INT	FW I	EXISTING FRAME WALL	10	YES	YES	YES	PRIVACY	RR	EXISTING--REPLACE WITH 3'-0" DOOR
58A	3'-0"x6'-8"	110	INT			NA					SERVICE	EXISTING
58B	3'-0"x6'-8"	113	INT	FW I	NEW FRAME WALL	4	YES	YES	YES	ENTRY	SERVICE	E.A.C.
201	3'-0"x6'-8"	M1	INT		EXISTING	NA					SERVICE	EXISTING
202	3'-0"x6'-8"	M1	INT		EXISTING	NA					SERVICE	EXISTING

SIGNAGE: PROVIDE ONE ID SIGN AT ENTRY TO EACH ROOM INDICATED, 3" TALL; ROOM NAME & NUMBER; WHITE LETTERING ON CONTRASTING FIELD; 1-1/2" TALL TEXT & BRAILLE (SPEC'S 10-1400)
INCLUDE HOLD OPEN FEATURE ON ALL CLOSERS
ALL EXTERIOR HOLLOW METAL DOORS AND FRAMES TO BE GALVANIZED MATERIAL.
PROVIDE A KICK PLATE ON THE PUSH SIDE OF EVERY DOOR WITH A CLOSER.
E.A.C. = ELECTRIC ACCESS CONTROL; SARGENT KP SERIES KEYPADS, BATTERY POWERED; PROGRAMMED AT DOOR (SPECS 08 7100; 2.02)
NC: NO CHANGE OHS: OVERHEAD SECTIONAL DOOR

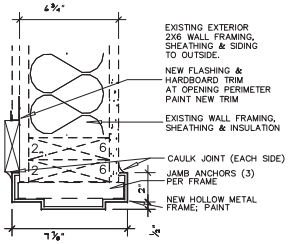


DOOR TYPES - ELEVATIONS
SCALE: 1/4" = 1'-0"

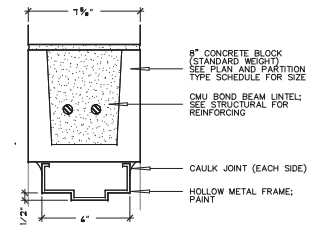
FIELD VERIFY ALL EXISTING OPENINGS



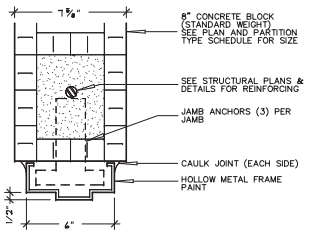
DOOR HEAD
SCALE: 3" = 1'-0" (1)



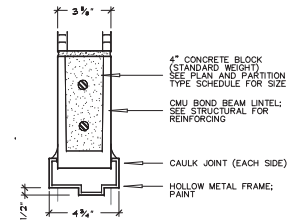
DOOR JAMB
SCALE: 3" = 1'-0" (1)



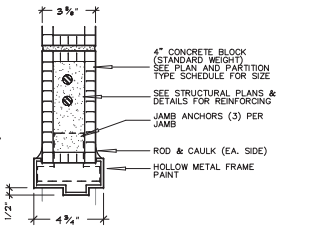
DOOR HEAD
SCALE: 3" = 1'-0" (2)



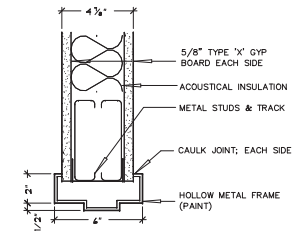
DOOR JAMB
SCALE: 3" = 1'-0" (2)



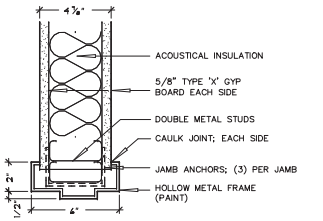
DOOR HEAD
SCALE: 3" = 1'-0" (3)



DOOR JAMB
SCALE: 3" = 1'-0" (3)



DOOR HEAD-NEW WALL
SCALE: 3" = 1'-0" (4)



DOOR JAMB-NEW WALL
SCALE: 3" = 1'-0" (4)

SHEET NOTES:

1. DOOR HARDWARE SUPPLIER SHALL CONDUCT A REVIEW MEETING WITH ARCHITECT & OWNER'S REPRESENTATIVE TO CONFIRM ALL DOOR HARDWARE STYLES, FUNCTIONS, AND ACCESSORIES PRIOR TO BEGINNING ANY WORK.
2. DOOR SIGNAGE SUPPLIER SHALL CONDUCT A REVIEW WITH ARCHITECT AND OWNER'S REPRESENTATIVE TO CONFIRM ALL SIGNAGE AND WORDING PRIOR TO BEGINNING ANY WORK.

SEE ALSO SPECIFICATIONS:
DIVISION 8
09 9123 INTERIOR PAINTING
10 4100 SIGNAGE (ROOM & WAY-FINDING)

GENERAL NOTES:

1) DO NOT SCALE DRAWINGS. FOLLOW WRITTEN DIMENSIONS ONLY. FOR CRITICAL DIMENSIONS NOT SHOWN IN THE DRAWINGS, REQUEST ADDITIONAL INFORMATION OR CLARIFICATION FROM THE ARCHITECT.
2) THESE DRAWINGS ARE ACCOMPANIED BY A PROJECT MANUAL, INCLUDING THE SPECIFICATIONS. DO NOT RELY SOLELY ON ONE OR THE OTHER. ADVISE THE ARCHITECT OR ENGINEER IMMEDIATELY OF ANY CONFLICTS BETWEEN THE TWO. IF NO TIMELY RESPONSE IS RECEIVED FROM THE ARCHITECT OR ENGINEER, ASSUME THE MORE EXPENSIVE OR MORE RESTRICTIVE CONDITION WILL PREVAIL.
3) EXISTING CONDITIONS DRAWINGS ARE BASED ON CASUAL OBSERVATIONS, NOT EXHAUSTIVE EXAMINATIONS. CONTRACTOR SHALL ADVISE ARCHITECT IMMEDIATELY OF ANY CONDITIONS ON THE SITE WHICH ARE AT VARIANCE WITH THE DRAWINGS OR SPECIFICATIONS.
4) CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND CONDITIONS AND MAKE MINOR ADJUSTMENTS AS NECESSARY. NOTIFY ARCHITECT OF ANY DISCREPANCIES WHICH MAY AFFECT THE OUTCOME OF THE WORK.
5) FOR INSTALLATION DETAILS, REFER FIRST TO THESE DRAWINGS. IF DESIRED DETAIL IS NOT INCLUDED, REFER TO MANUFACTURER'S TECHNICAL INFORMATION & APPLICABLE BUILDING CODES FOR ACCEPTABLE STANDARD MEANS, MATERIALS AND/OR METHODS. IF FURTHER DETAIL IS NEEDED REQUEST FROM ARCHITECT.
6) IN ALL QUESTIONS ARISING FROM APPLICATION OF THE ADOPTED BUILDING CODES, THE LOCAL AUTHORITY HAVING JURISDICTION (JEFFERSON COUNTY CODE ENFORCEMENT) SHALL BE THE FINAL ARBITER(S).
7) DO NOT CUT OR MODIFY ANY STRUCTURAL ITEM WITHOUT FIRST REVIEWING THE PROPOSED MODIFICATION WITH THE ARCHITECT AND SUBMITTING A PLAN FOR ANY TEMPORARY SHORING NECESSARY.
8) ALL MATERIALS SHALL BE NEW AND INSTALLED TO MANUFACTURER'S WRITTEN SPECIFICATIONS.
8) PROVIDE ALL NECESSARY BARRIERS AND SAFETY SIGNAGE NECESSARY FOR A SAFE WORK ENVIRONMENT, CONFORM TO ALL LOCAL, COUNTY, STATE AND FEDERAL REQUIREMENTS WHICH APPLY.
9) WHERE AN ITEM OR SYSTEM IS SHOWN TO BE INCLUDED IN THE WORK, IT SHALL BE PROVIDED AS A COMPLETE, OPERABLE, CODE-COMPLIANT ITEM OR SYSTEM. THE CONTRACTOR SHALL INCLUDE ALL CONNECTIONS, SWITCHING, POWER, VENTILATION AND ANY OTHER ACCESSORIES NECESSARY TO PROVIDE A COMPLETE, OPERABLE, CODE-COMPLIANT ITEM OR SYSTEM.
10) CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER, ARCHITECT/ENGINEER, AND OTHER TRADES THROUGHOUT THE PROJECT.
11) ROUTING OF ELECTRICAL WIRING, PLUMBING LINES (WATER SUPPLY, WASTE, DRAIN, VENTS), FIRE PROTECTION SUPPLY, AND DUCTWORK WHERE SHOWN ON PLANS IS SCHEMATIC. IT IS THE RESPONSIBILITY OF EACH OF THESE CONTRACTORS (SUBCONTRACTORS) TO COORDINATE INSTALLATION OF THESE ITEMS WITH EACH OTHER.
12) LOCATION OF HVAC EQUIPMENT (RTU'S, AIR HANDLERS, CONDENSERS, EXHAUST FANS, ETC) IF SHOWN, IS SCHEMATIC. COORDINATE THE FINAL LOCATIONS WITH OTHER TRADES AND CONSIDERATIONS AND CONFIRM WITH ARCHITECT.
13) RENDER ALL NEW OR MODIFIED PENETRATIONS THROUGH BUILDING'S EXTERIOR ENCLOSURE WEATHER TIGHT.
14) PAINT ALL NEW ROOF AND/OR WALL PENETRATIONS TO MATCH (AS CLOSELY AS IS PRACTICAL) THE ADJACENT ROOF OR WALL MATERIAL.
15) COMMENCING INSTALLATION OF ANY ITEM, EQUIPMENT OR SYSTEM INDICATES ACCEPTANCE OF ANY PRE-EXISTING CONDITION UPON WHICH THE SUBSEQUENT CONSTRUCTION IS DEPENDENT OR ATTACHED TO OR SUPPORTED ON. FOR EXAMPLE, BEGINNING FLOORING INSTALLATION REPRESENTS ACCEPTANCE OF THE SUB FLOOR CONSTRUCTION.
16) ALL EXISTING FINISHES DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO A CONDITION AT LEAST EQUAL IN MATERIAL AND APPEARANCE TO THAT WHICH EXISTED BEFORE CONSTRUCTION BEGAN.
17) PROTECT EXISTING UTILITIES DURING CONSTRUCTION.
18) UPON COMPLETION OF CONSTRUCTION ACTIVITIES, AND PRIOR TO TURNOVER OF THE PROJECT TO THE OWNER, CONTRACTOR SHALL THOROUGHLY CLEAN ALL WORK AREAS SO THAT THEY ARE FREE OF ALL CONSTRUCTION DIRT AND DEBRIS.

COMMISSION NUMBER
19-071
DRAWN BY
sjb/mjb
CHECKED BY
sjb
ISSUED: 4/15/2020
Printed: 4/15/2020

for BIDDING & PERMIT REVIEW
for CONSTRUCTION with APPROVED PERMITS
PLAN STATUS

STATE OF MISSOURI
Steven J. Bacon
NUMBER A-2006007290
4/15/2020

Steven J. Bacon
Architect
MO Lic: #007402

BACON COMMERCIAL DESIGN LLC
ARCHITECTURAL Design & Consulting
po box 605
crystal city
mo 63019
(636) 933-0007
corporate authority certificate #: 2006007290

Jefferson County, Missouri
Animal Resource Center
OWNER

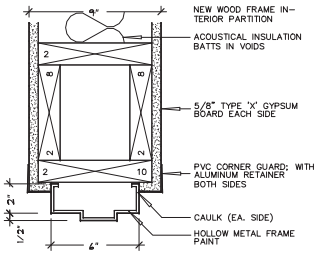
Remodeling and Addition
ANIMAL RESOURCE CENTER
4848 State Rte 30
House Springs, MO 63051
COMMISSION

INTERNATIONAL CODE COUNCIL:
IBC 2015
INT'L FIRE CODE 2015
INT'L MECH'L CODE 2015
INT'L ENERGY CODE 2015
INT'L PLUMB'G CODE 2015
NATIONAL ELECTRICAL CODE 2014
JEFFERSON CO. ELECTRIC 2017
BLD'G CODE(S)

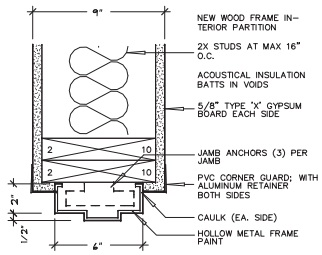
DOOR SCHEDULE and DETAILS
SHEET TITLE

SHEET NUMBER
A-9.0
17 OF 21

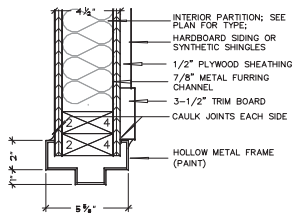
JC-ARC-Archi-01d.aec
PRINTED: 4/15/2020



DOOR HEAD
SCALE: 3" = 1'-0" (5)



DOOR JAMB
SCALE: 3" = 1'-0" (5)



DOOR JAMB
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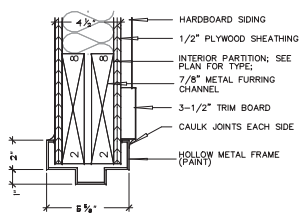
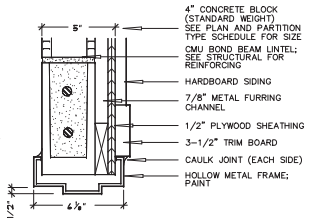
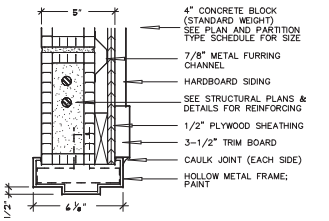


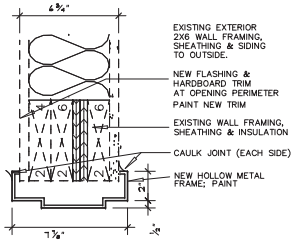
DOOR HEAD
SCALE: 3" = 1'-0" (8)



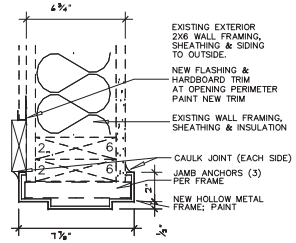
DOOR HEAD
SCALE: 3" = 1'-0" (6)



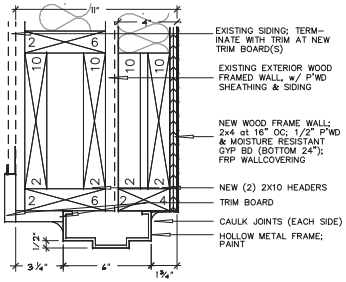
DOOR JAMB
SCALE: 3" = 1'-0" (6)



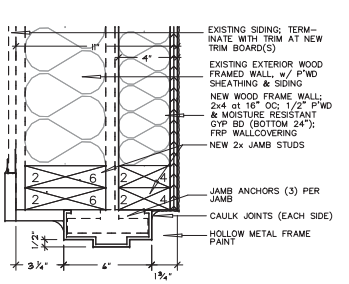
DOOR HEAD
SCALE: 3" = 1'-0" (9)



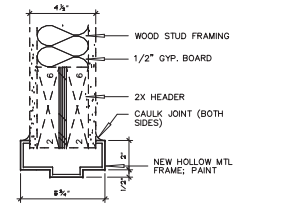
DOOR JAMB
SCALE: 3" = 1'-0" (9)



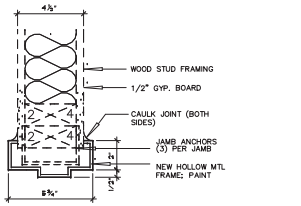
DOOR HEAD
SCALE: 3" = 1'-0" (7)



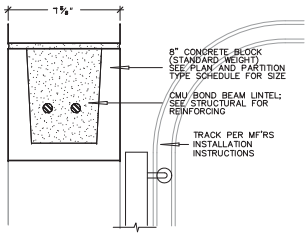
DOOR JAMB
SCALE: 3" = 1'-0" (7)



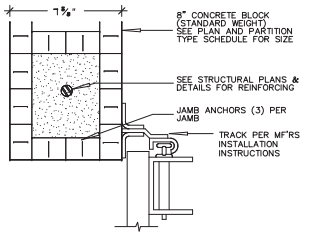
DOOR HEAD—EX'G WALL
SCALE: 3" = 1'-0" (10)



DOOR JAMB—EX'G WALL
SCALE: 3" = 1'-0" (10)



DOOR HEAD
SCALE: 3" = 1'-0" OHS



DOOR JAMB
SCALE: 3" = 1'-0" OHS

SHEET NOTES:

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SEE ALSO SPECIFICATIONS:
DIVISION 8
09 9123 INTERIOR PAINTIN

GENERAL NOTES:

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DOOR DETAILS
SHEET TITLE

SHEET NUMBER
A-9.1
18 OF 21

JC-ARC-Archi-01d.dwg
PRINTED 6/2020

WINDOW SCHEDULE									
MK	WINDOW UNIT SIZE	LOCN	TYPE	QTY	GLAZE	WALL	FINISH	H/J/S	REMARKS
1	EXISTING; NO CHANGE	INT		1	NA	NA		NA	EXISTING
2	6'-0"W x 3'-8"	INT	HM-1	2	SINGLE 1/4"; CLEAR	2x4 WD OR MTL FRAM'G	FACTORY PRIME; FIELD PAINT	1	CENTER MULLION
3	EXISTING; NO CHANGE	EXT		19	NA	NA		NA	EXISTING
4	3'-4"x4'-0"	INT	HM-2	6	SINGLE 1/4"; CLEAR	2x4 WOOD STUDS	FACTORY PRIME; FIELD PAINT	2	
5	3'-0"x4'-4"	INT	HM-2	6	SINGLE 1/4"; CLEAR	4" CMU; FURR'G PLYWD (1) SIDE	FACTORY PRIME; FIELD PAINT	3	
6	3'-0"x5'-0"	EXT	VINYL	1	DBL 3/4" INSULAT'G; CLEAR	2X6 WD FRAM'G; EX'G	PRE-FIN'D; MFR STANDARD	4	MATCH EXISTING EXTERIOR WINDOWS

HOLLOW METAL FRAME; PAINT; 1/4" SAFETY GLASS; TAMPER RE-SISTANT STOPS; INSTALLS IN EXISTING WALL

HM-1

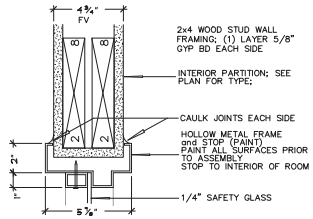
HOLLOW METAL FRAME; PAINT; 1/4" SAFETY GLASS; TAMPER RE-SISTANT STOPS INSTALLS IN NEW PRTN; 2" FRAMES; 1" STOPS 4" TRIM OUT-SIDE

HM-2

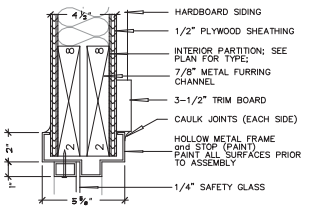
VINYL CASEMENT (FIXED) WINDOW NEW OPENING IN EXISTING WALL; 3/4" INSULATING GLASS; 4" TRIM OUTSIDE; GYP BD RETURNS INSIDE; CULTURED MAR-BLE SILL INSIDE

VINYL CASEMENT

WINDOW TYPES
NO SCALE



WINDOW HEAD ①
SCALE: 3" = 1'-0"



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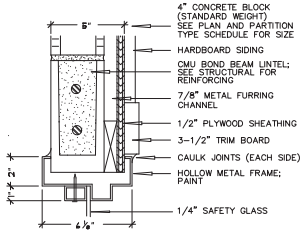

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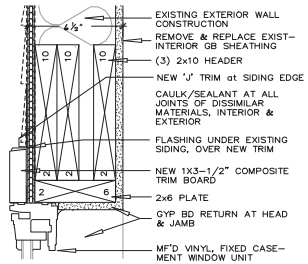

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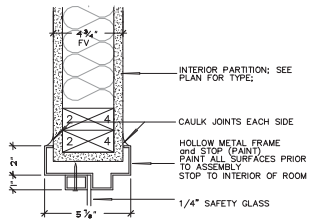

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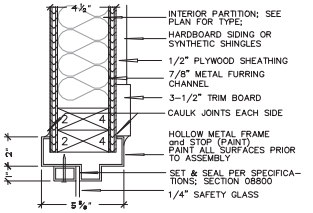

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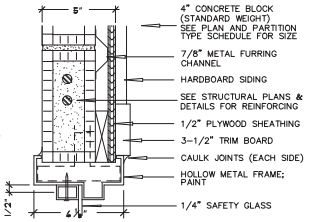

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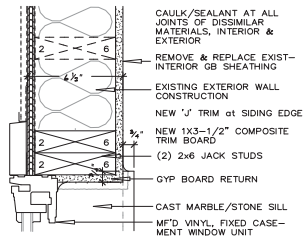

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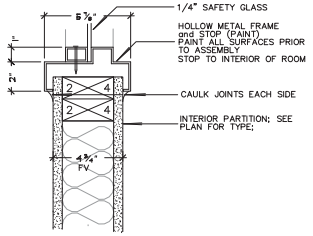

WINDOW SILL ①
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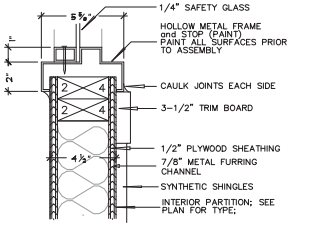

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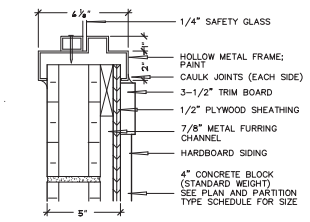

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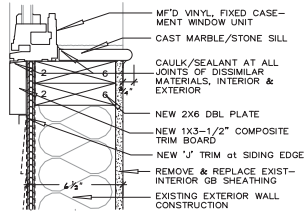

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MF'D VINYL WINDOW UNIT (SPECS 08 5313); FOLLOW MFR'S INSTAL-LATION INSTRUCTIONS

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SEE ALSO SPECIFICATIONS:
DIVISION 8
09 9123 INTERIOR PAINTIN

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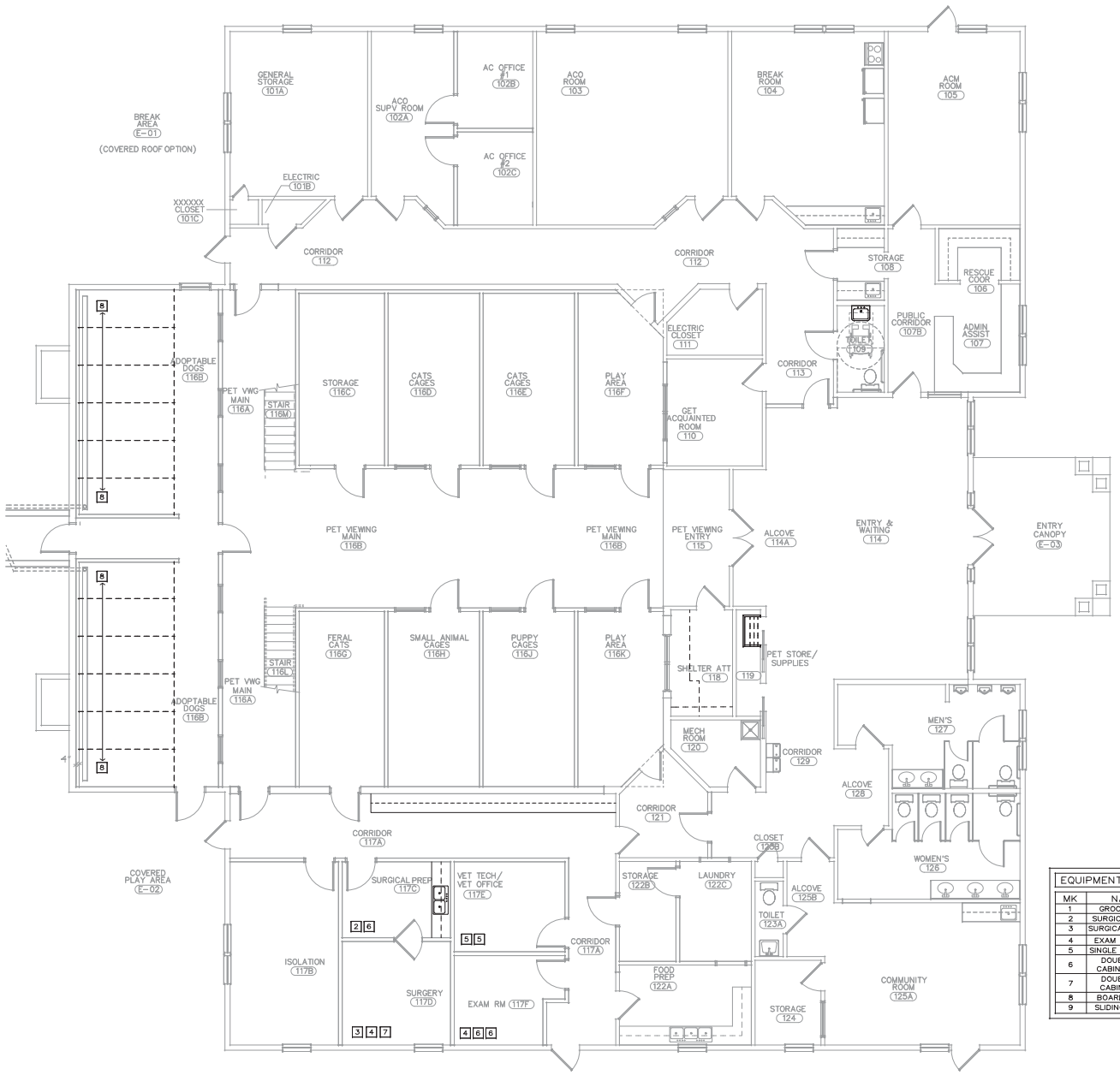
WINDOW SCHEDULE & DETAILS
SHEET TITLE

SHEET NUMBER
A-9.2
19 OF 21

JC-ARC-Archi-01d.aec
PRINTED: 4/16/2020



NEW 1st FLOOR FIXTURE & EQUIPMENT PLAN – AREA 'A'
SCALE: 3/16" = 1'-0"
4 2 0 4 8

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EQUIPMENT SCHEDULE

MK	NAME	PROVIDER	INSTALLER	ELECTR	WTR	DRAIN	VENT	NOTES
1	GROOMING TUB	OWNER	GEN CONT'R	N	Y	Y	Y	
2	SURGICAL WASH TUB	OWNER	GEN CONT'R	N	Y	Y	Y	
3	SURGICAL LIGHT/LARGE	OWNER	GEN CONT'R	Y	N	N	N	
4	EXAM LIGHT/SMALL	OWNER	GEN CONT'R	Y	N	N	N	
5	SINGLE DOOR CABINET	OWNER	OWNER	N	N	N	N	
6	DOUBLE DOOR CABINET/MEDIUM	OWNER	OWNER	N	N	N	N	
7	DOUBLE DOOR CABINET/LARGE	OWNER	OWNER	N	N	N	N	
8	BOARDING CAGES	OWNER	SEP SUPPLIER	N	N	N	N	
9	SLIDING EXIT DOOR	OWNER	SEP SUPPLIER	N	N	N	N	

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FIXTURE & EQUIPMENT PLAN: AREA 'A'
SHEET TITLE

SHEET NUMBER
A-10.0

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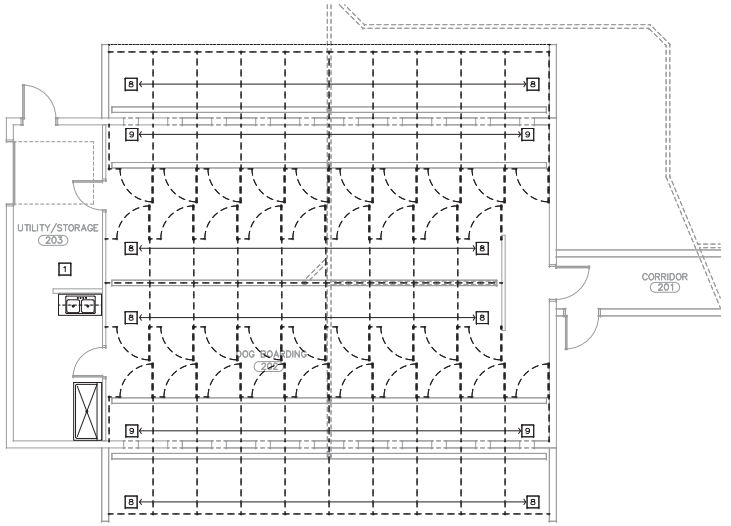
4) CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND CONDITIONS AND MAKE MINOR ADJUSTMENTS AS NECESSARY. NOTIFY ARCHITECT OF ANY DISCREPANCIES WHICH MAY AFFECT THE OUTCOME OF THE WORK.
5) FOR INSTALLATION DETAILS, REFER FIRST TO THESE DRAWINGS. IF DESIRED DETAIL IS NOT INCLUDED, REFER TO MANUFACTURER'S TECHNICAL INFORMATION & APPLICABLE BUILDING CODES FOR ACCEPTABLE STANDARD MEANS, MATERIALS AND/OR METHODS. IF FURTHER DETAIL IS NEEDED REQUEST FROM ARCHITECT.
6) IN ALL QUESTIONS ARISING FROM APPLICATION OF THE ADOPTED BUILDING CODES, THE LOCAL AUTHORITY HAVING JURISDICTION (JEFFERSON COUNTY CODE ENFORCEMENT) SHALL BE THE FINAL ARBITER(S).
7) DO NOT CUT OR MODIFY ANY STRUCTURAL ITEM WITHOUT FIRST REVIEWING THE PROPOSED MODIFICATION WITH THE ARCHITECT AND SUBMITTING A PLAN FOR ANY TEMPORARY SHORING NECESSARY.
8) ALL MATERIALS SHALL BE NEW AND INSTALLED TO MANUFACTURER'S WRITTEN SPECIFICATIONS.
9) PROVIDE ALL NECESSARY BARRIERS AND SAFETY SIGNAGE NECESSARY FOR A SAFE WORK ENVIRONMENT, CONFORM TO ALL LOCAL, COUNTY, STATE AND FEDERAL REQUIREMENTS WHICH APPLY.
9) WHERE AN ITEM OR SYSTEM IS SHOWN TO BE INCLUDED IN THE WORK, IT SHALL BE PROVIDED AS A COMPLETE, OPERABLE, CODE-COMPLIANT ITEM OR SYSTEM. THE CONTRACTOR SHALL INCLUDE ALL CONNECTIONS, SWITCHING, POWER, VENTILATION AND ANY OTHER ACCESSORIES NECESSARY TO PROVIDE A COMPLETE, OPERABLE, CODE-COMPLIANT ITEM OR SYSTEM.
10) CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER, ARCHITECT/ENGINEER, AND OTHER TRADES THROUGHOUT THE PROJECT.
11) ROUTING OF ELECTRICAL WIRING, PLUMBING LINES (WATER SUPPLY, WASTE, DRAIN, VENTS), FIRE PROTECTION SUPPLY, AND DUCTWORK WHERE SHOWN ON PLANS IS SCHEMATIC. IT IS THE RESPONSIBILITY OF EACH OF THESE CONTRACTORS (SUBCONTRACTORS) TO COORDINATE INSTALLATION OF THESE ITEMS WITH EACH OTHER.
12) LOCATION OF HVAC EQUIPMENT (RTU'S, AIR HANDLERS, CONDENSERS, EXHAUST FANS, ETC) IF SHOWN, IS SCHEMATIC. COORDINATE THE FINAL LOCATIONS WITH OTHER TRADES AND CONSIDERATIONS AND CONFIRM WITH ARCHITECT.
13) RENDER ALL NEW OR MODIFIED PENETRATIONS THROUGH BUILDING'S EXTERIOR ENCLOSURE WEATHER TIGHT.
14) PAINT ALL NEW ROOF AND/OR WALL PENETRATIONS TO MATCH (AS CLOSELY AS IS PRACTICAL) THE ADJACENT ROOF OR WALL MATERIAL.
15) COMMENCING INSTALLATION OF ANY ITEM, EQUIPMENT OR SYSTEM INDICATES ACCEPTANCE OF ANY PRE-EXISTING CONDITION UPON WHICH THE SUBSEQUENT CONSTRUCTION IS DEPENDENT OR ATTACHED TO OR SUPPORTED ON. FOR EXAMPLE, BEGINNING FLOORING INSTALLATION REPRESENTS ACCEPTANCE OF THE SUB FLOOR CONSTRUCTION.
16) ALL EXISTING FINISHES DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO A CONDITION AT LEAST EQUAL IN MATERIAL AND APPEARANCE TO THAT WHICH EXISTED BEFORE CONSTRUCTION BEGAN.
17) PROTECT EXISTING UTILITIES DURING CONSTRUCTION.
18) UPON COMPLETION OF CONSTRUCTION ACTIVITIES, AND PRIOR TO TURNOVER OF THE PROJECT TO THE OWNER, CONTRACTOR SHALL THOROUGHLY CLEAN ALL WORK AREAS SO THAT THEY ARE FREE OF ALL CONSTRUCTION DIRT AND DEBRIS.



NEW 1st FLOOR FIXTURE & EQUIPMENT PLAN – AREA 'B'
SCALE: 3/16" = 1'-0"

4 2 0 4 8

EQUIPMENT SCHEDULE

MK	NAME	PROVIDER	INSTALLER	ELECTR	WTR	DRAIN	VENT	NOTES
1	GROOMING TUB	OWNER	GEN CONT'R	N	Y	Y	Y	
2	SURGICAL WASH TUB	OWNER	GEN CONT'R	N	Y	Y	Y	
3	SURGICAL LIGHT/LARGE	OWNER	GEN CONT'R	Y	N	N	N	
4	EXAM LIGHT/SMALL	OWNER	GEN CONT'R	Y	N	N	N	
5	SINGLE DOOR CABINET	OWNER	OWNER	N	N	N	N	
6	DOUBLE DOOR CABINET/MEDIUM	OWNER	OWNER	N	N	N	N	
7	DOUBLE DOOR CABINET/LARGE	OWNER	OWNER	N	N	N	N	
8	BOARDING CAGES	OWNER	SEP SUPPLIER	N	N	N	N	
9	SLIDING EXIT DOOR	OWNER	SEP SUPPLIER	N	N	N	N	

COMMISSION NUMBER
19-071
DRAWN BY
sjb/mjb
CHECKED BY
sjb
ISSUED: 4/15/2020
Printed: 4/15/2020

for BIDDING & PERMIT REVIEW

for CONSTRUCTION with APPROVED PERMITS

PLAN STATUS

4/15/2020

Steven J. Bacon
Architect
MO Lic: #007402

BACON
COMMERCIAL DESIGN LLC

ARCHITECTURAL
Design & Consulting

po box 605
crystal city
mo 63019
(636) 933-0007

corporate authority certificate #: 2006007290

Jefferson County, Missouri

Animal Resource Center

OWNER

Remodeling and Addition
ANIMAL RESOURCE CENTER
4848 State Rte 30
House Springs, MO 63051

COMMISSION

INTERNATIONAL CODE COUNCIL:
IBC 2015
INT'L FIRE CODE 2015
INT'L MECH'L CODE 2015
INT'L ENERGY CODE 2015
INT'L PLUMB'G CODE 2015
NATIONAL ELECTRICAL CODE 2014
JEFFERSON CO. ELECTRIC 2017

BLD'G CODE(S)

FIXTURE & EQUIPMENT PLAN:
AREA 'B'

SHEET TITLE

SHEET NUMBER
A-10.1
21 OF 21

PIPING SPECIFICATIONS

PIPING SYSTEM	SIZE	MATERIAL	JOINTS	INSULATION
PROPANE GAS (G)	< 3"	SCH. 40 C.S.	T & C	N/A
	~~≥3"~~	~~COPPER~~	~~BRAZED~~	~~N/A~~
	~~≥2"~~	~~SCH. 10 S.S.~~	~~WELDED~~	~~N/A~~

1. 6" DIRT LEG SHALL BE INSTALLED AT ALL GAS EQUIPMENT.
2. A GAS REGULATOR SHALL BE INSTALLED AT GAS EQUIPMENT WHERE APPLICABLE.
3. ALL GAS PIPING EXPOSED TO THE ELEMENTS SHALL BE PAINTED WITH "RUSTOLEUM" PAINT.
4. ALL GAS PIPING SHALL BE INSTALLED PER NFPA 54.

PIPING SYSTEM	SIZE	MATERIAL	JOINTS	INSULATION
REFRIGERANT (RL, RS, RG)	ALL	TYPE ACR COPPER	BRAZED	1/2" ELASTOMERIC

1. ALL ELBOWS TO BE LONG RADIUS.
2. SUCTION TRAPS MAY BE PRE-FORMED OR MADE WITH 45s AND 90s.
3. SUCTION PIPING SHALL BE SLOPED IN DIRECTION OF FLOW.
3. SYSTEM SHALL BE EVACUATED AND CHARGED PRIOR TO START UP.

PIPING SYSTEM	SIZE	MATERIAL	JOINTS	INSULATION
CONDENSATE DRAIN (CD)	< 3"	SCH. 40 PVC	GLUED	N/A
	~~≥3"~~	~~TYPE "M" COPPER~~	~~BRAZED~~	~~1/2" ELASTOMERIC~~
	~~≥3"~~	~~SCH. 10 S.S.~~	~~T & C~~	~~1/2" ELASTOMERIC~~

1. PVC SHALL NOT BE USED IN RETURN AIR PLENUMS.
2. PROVIDE DRAIN TRAP AT ALL DRAW-THROUGH EQUIPMENT.
3. HORIZONTAL PIPING SHALL BE SLOPED IN DIRECTION OF FLOW.
4. CONDENSATE SHALL NOT DISCHARGE INTO STREET, ALLEY, OR ANY OTHER AREA THAT MAY CAUSE A NUISANCE.
5. A SECONDARY DRAIN OR AUXILIARY DRAIN PAN SHALL BE REQUIRED WHERE DAMAGE TO ANY BUILDING COMPONENTS WILL OCCUR AS A RESULT OF OVERFLOW FROM THE EQUIPMENT DRAIN PAN.

PIPING SYSTEM	SIZE	MATERIAL	JOINTS	INSULATION
SANITARY/VENT SYSTEMS	ALL	SCH. 40 PVC	GLUED	N/A
	< 2"	DWV COPPER	BRAZED	N/A
	ALL	SCH. 40 C.I.	HUB-NO/HUB	N/A
DOMESTIC COLD WATER	ALL	NOTE 3	BRAZED	MIN 1/2" NOTE 1
DOMESTIC HOT WATER (140°)	~~ALL~~	~~NOTE 3~~	~~BRAZED~~	~~MIN 3/4" NOTE 1~~
DOMESTIC HOT WATER (110°)	ALL	NOTE 3	BRAZED	MIN 1/2" NOTE 1
DOMESTIC HOT WATER RETURN	ALL	NOTE 3	BRAZED	N/A
4000 PSI PRESSURE WASH	< 2"	SCH 80 S.S.	WELDED	N/A

1. INSULATE WITH FIBERGLASS ONLY IN LOCATIONS EXPOSED TO HUMAN TOUCH AND NEOPRENE CLOSED CELL IN PLENUM SPACES AND SPACES WHERE CONDENSATE MAY FORM. UNDERGROUND WITH CLOSED CELL ELASTOMERIC WITH BUILT IN WATER VAPOR BARRIER
2. SYSTEM TO HAVE DRAIN VALVES AT LOW POINT OF SYSTEM.
3. TYPE "L" COPPER TYPE "K" (UNDERGROUND), PEX, PVC, AND CPVC CHECK WITH LOCAL AHJ PRIOR TO INSTALL FOR APPROVED ACCEPTANCE

DUCT INSULATION SCHEDULE

DUCT SYSTEM	LOCATION: OUTSIDE ENVELOPE	NON-CONDITIONED ATTIC SPACE	PLENUM SPACE	INT. WALL CAVITY OR CHASE	EXT. WALL CAVITY OR DUCTED RETURN	GRADE BELOW SLAB
SUPPLY	R=8.0	R=8.0	R=6.0	R=6.0	R=6.0	R=8.0
RETURN	R=8.0	R=8.0	NONE	NONE	R=6.0	R=8.0
EXHAUST	NONE	R=8.0	NONE	NONE	NONE	R=8.0
OUTSIDE AIR	NONE	R=8.0	R=6.0	R=6.0	R=6.0	R=8.0

1. DIMENSIONS SHOWN ON PLAN OR FREE SPACE. ADD INSULATION THICKNESS TO DETERMINE OVERALL DUCT DIMENSIONS.
2. ALL LOW PRESSURE SUPPLY FLEXIBLE AIR DUCTS SHALL HAVE FIBERGLASS INSULATION AND VAPOR BARRIER.
3. ALL EXHAUST AIR FLEXIBLE DUCTS SHALL BE NON-INSULATED.
4. MAXIMUM LENGTH OF FLEXIBLE DUCTS SHALL NOT EXCEED 10'-0"
5. FIRE DAMPERS SHALL BE INSTALLED PER SMACNA 15D FIRE DAMPER GUIDE OR APPROVED UL LISTING.
6. PROVIDE FLEXIBLE CANVAS CONNECTIONS AT ALL DUCT CONNECTIONS TO VIBRATING EQUIPMENT.
7. SUPPLY DUCT INSULATION TO BE FIBERGLASS WITH FOIL FACE AND VAPOR BARRIER.
8. KITCHEN HOOD EXHAUST DUCTS TO HAVE WELDED JOINTS AND COMPLY WITH NFPA 96.
9. LOW PRESSURE AND MEDIUM PRESSURE DUCT: R=6.0 INTERIOR, R=8.0 EXTERIOR.
10. KOOLDUCT/THERMADUCT LOW PRESSURE AND MEDIUM PRESSURE DUCT: KOOLDUCT: R=6.0, R=8.1, R=12.0 INTERIOR THERMADUCT: R=8.1, R=12, R=16.2, R=20.1,R24 EXTERIOR.

DUCT INSULATION LEGEND

- INTERNALLY LINED DUCTWORK
- EXTERNALLY WRAPPED DUCTWORK
- STAINLESS STEEL DUCT
- BLACK IRON WELDED KITCHEN HOOD EXHAUST DUCT

INSULATION SPECIFICATIONS

1.01 INSULATION MATERIALS USED SHALL HAVE COMPOSITE (INSULATION, JACKET ORFACING AND ADHESIVE USED) FIRE AND SMOKE HAZARD RATING AS TESTED BY PROCEDURE ASTM E-84, NFPA 255, AND UL 723 NOT EXCEEDING FLAME SPREAD OF 25, AND SMOKE DEVELOPED OF 50.

1.02 INSULATION MATERIAL AND THICKNESS SHALL MEET THE REQUIREMENTS OF ASHRAE STANDARD 90.1-1999

A. INSULATION SHALL BE APPLIED IN STRICT ACCORDANCE WITH INSULATION MANUFACTURER'S INSTRUCTIONS.

B. REMOVABLE INSULATION SHALL BE USED FOR EQUIPMENT AND PIPING COMPONENTS THAT REQUIRE ROUTINE SERVICE.

2.01 PIPE INSULATION MATERIALS

A. FIBERGLASS INSULATION: PROVIDE INSULATION COMPOSED OF INORGANIC GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. THE MAXIMUM THERMAL CONDUCTIVITY IN ACCORDANCE ASTM C 335 SHALL BE AS FOLLOWS:

MAXIMUM THERMAL CONDUCTIVITY (BTU IN/HR SQ. FT. DEG. F)	MEAN RATING TEMPERATURE (DEG. F)
0.34	250
0.31	200
0.30	150
0.28	100

1. PREFORMED PIPE INSULATION: COMPLY WITH ASTM C 547, TYPE I WITH FACTORY APPLIED JACKET.

B. CELLULAR GLASS INSULATION: PROVIDE INSULATION COMPOSED OF 8.0 PCF, INCOMBUSTIBLE, INORGANIC, ANNEALED, FOAMED, OR CELLULATED GLASS WITH HERMETICALLY SEALED CELLS. COMPLY WITH ASTM 552, TYPE II, CLASS 2.

C. FLEXIBLE ELASTOMERIC INSULATION: PROVIDE INSULATION COMPOSED OF CLOSED CELL, SELF-SEALING, EXPANDED RUBBER MATERIAL. COMPLY WITH ASTM C 534, TYPE-I TUBULAR MATERIAL, AND TYPE II FOR SHEET MATERIALS. POLYOLEFIN INSULATION MATERIALS ARE NOT ACCEPTED.

1. INSULATION SHALL BE JACKETED. UNLESS OTHERWISE SPECIFIED, JACKETING MATERIALS FOR FIBERGLASS PIPING INSULATION SHALL BE REINFORCED, ALL SERVICE, VAPOR RETARDER JACKET WITH SELF-SEALING LAP JOINT SUITABLE FOR DIRECT APPLICATION OF FINISH WITHOUT SURFACE PREPARATIONS.

D. KOOLDUCT/THERMADUCT: PANELS COMPRISED OF FIBER FREE THERMOSET PHENOLIC INSULATED FACED ON BOTH SIDES. MEETS UL 723 FLAME SPREAD /SMOKE DEVELOPED (25/50. MEETS ASHRAE 90.1 IECC R-VALUE AND IMC/IBC CLASS I DUCT MATERIAL

PROJECT DESIGN CONDITIONS

OUTDOOR CONDITIONS	LOCATION		SUMMER (DB/WB)				WINTER			
	HOUSE SPRINGS, MO		95°/78°				0°			
ENVELOPE DESIGN	AREA	WALL U-VALUE	ROOF U-VALUE	GLASS U-VALUE	GLASS S.C.	PARTITION U-VALUE				
	ALL	0.0875	0.0650	0.50	0.55	0.25				
AREA/ROOM	O.A. (CFM/PERSON)	O.A. (CFM/SF)	ZONE AIR DISTR. EFFECT.	TOTAL CFM	COOLING (°F/RH)	HEATING (°F/RH)	PEOPLE	LIGHTING (W/SF)	EQUIP. (W/SF)	
OFFICE	5	0.06	1.0	-	-	-	-	-	-	
VET/CLINIC	-	0.18	1.0	-	-	-	-	-	-	
PET AREA	-	0.18	1.0	-	-	-	-	-	-	

GENERAL NOTES HVAC

1. DESIGN AND INSTALLATION IN ACCORDANCE WITH 2015 INTERNATIONAL MECHANICAL AND 2015 INTERNATIONAL BUILDING CODES.
2. SEISMIC RESTRAINTS BASED ON SEISMIC DESIGN CATEGORY "D".
3. SMOKE DETECTORS SHALL BE INSTALLED IN RETURN AIR SYSTEMS WITH A DESIGN CAPACITY GREATER THAN OR EQUAL TO 2,000 CFM, IN THE RETURN AIR DUCT OR PLENUM UPSTREAM OF ANY FILTERS, EXHAUST AIR CONNECTIONS OR DECONTAMINATION EQUIPMENT AND APPLIANCES.
4. MATERIALS EXPOSED IN PLENUMS SHALL BE NON COMBUSTIBLE OR HAVE A FLAME SPREAD OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
5. ALL LINTELS, FRAMING, FURRING, PATCHING, AND PAINTING REQUIRED WILL BE PROVIDED BY THE GENERAL CONTRACTOR.
6. THE GENERAL CONTRACTOR SHALL PROVIDE A UNIFORM LEVEL SUPPORT INCLUDING FRAMING FOR ALL ROOF MOUNTED EQUIPMENT.
7. ALL POWER WIRING, DISCONNECT SWITCHES, AND MOTOR STARTERS SHALL BE COORDINATED WITH ELECTRICAL CONTRACTOR.

SMACNA SEALING REQUIREMENTS

DUCT TYPE	DUCT PRESSURE CLASS	SEALING PRESSURE CLASS	LEAKAGE CLASS
RECTANGULAR	4" W.G. AND ABOVE (+OR-)	A	24
ROUND	4" W.G. AND ABOVE (+OR-)	A	12
RECTANGULAR	3" W.G. (+OR-)	B	12
ROUND	3" W.G. (+OR-)	B	6
RECTANGULAR	2" W.G. (+OR-)	C	6
ROUND	2" W.G. (+OR-)	C	3
RECTANGULAR	1" W.G. AND BELOW (+OR-)	NONE	NONE
ROUND	1" W.G. AND BELOW (+OR-)	NONE	NONE

1. SEAL CLASS A: TRAVERSE AND LONGITUDINAL JOINTS AND DUCT WALL PENETRATIONS TO BE SEALED.
2. SEAL CLASS B: TRAVERSE AND LONGITUDINAL JOINTS TO BE SEALED.
3. SEAL CLASS C: TRAVERSE JOINTS ONLY TO BE SEALED.
4. ALL EXTERIOR DUCT TO BE SEAL CLASS A REGARDLESS OF PRESSURE CLASS.
5. ALL DUCTWORK CARRYING HAZARDOUS FUMES (CLASS 3 OR 4), NOT REQUIRING LIQUID TIGHT JOINTS AND SEAMS, REGARDLESS OF PRESSURE CLASS SHALL BE SMACNA SEAL CLASS A.
6. ALL DUCTWORK SERVING COMMERCIAL KITCHEN HOODS, DISHWASHERS, OR WHERE SPECIFIED, SHALL HAVE WELDED, LIQUID TIGHT JOINTS AND SEAMS. USE APPROPRIATE GASKETS AND SEALANTS WHERE WELDING IS NOT POSSIBLE.
7. KOOLDUCT MAX. 4" W.G. SMACNA CLASS 3 W/4 BOLT COUPLING SYSTEM THERMADUCT MAX. 10 W.G. SMACNA CLASS 1 W/THERMADUCT CONNECTION SYSTEM.

SPECIALTY DUCT	LOCATION	PRESSURE CLASS	MATERIAL	INSULATION THICKNESS
KENNEL EXHAUST	~~MEDIUM PRESSURE~~	~~4" W.G.~~	~~GALVANIZED~~	~~N/A~~
	LOW PRESSURE	2" W.G.	GALVANIZED	N/A
	~~FUME HOOD~~	~~2" W.G.~~	~~304 S.S.~~	~~N/A~~
KICHEN HOOD EXHAUST	~~ALL~~	~~2" W.G.~~	~~16 GA. B.I.~~	~~2 HR.~~

PLUMBING FIXTURE CONNECTION SCHEDULE

MARK	DESCRIPTION	WASTE	IW	VENT	CW	HW
SK-1	(SCRUB) SINK	2"		1-1/2"	3/4"	3/4"
SK-2	2-COMPARTMENT SINK	2"	---	1-1/2"	3/4"	3/4"
DG-2	DOG GROOMING SINK	2"	---	1-1/2"	3/4"	3/4"
EWH-1	WATER HEATER	---	---	---	3/4"	3/4"
MS-1	MOP SINK	2"	---	1-1/2"	1/2"	1/2"
FD-1	FLOOR DRAIN	2"-4"	---	---	---	---

NOTES:

1. EXISTING HOUSE SYSTEMS SANITARY SYSTEM UTILIZES AN EXISTING SEPTIC SYSTEM ON SITE. FIXTURES SHOWN IN TABLES ARE NOT EXPECTED TO AFFECT THE EXISTING SANITARY SYSTEM.
2. NEW SEWAGE DRAINS FROM NEW PLUMBING FIXTURES TO TIE INTO EXISTING SEPTIC SYSTEM.ADDITIONAL FIXTURES SHALL NOT AFFECT EXISTING SYSTEM FOR CAPACITY. EXISTING SEPTIC SYSTEM IS INTENDED TO ONLY SERVE DOMESTIC FIXTURES.
3. NEW KENNEL TRENCH DRAIN SYSTEM TO TERMINATE INTO NEW EXTERIOR STORAGE TANK. SYSTEM SHALL BE INDEPENDENT OF THE EXISTING SEPTIC SYSTEM. OWNER TO COORDINATE PUMP/REMOVAL OF WASTE BY OTHERS FOR DISPOSAL.

ALTERNATE NOTES

1. **ADD COSATRON AIR CLEANING SYSTEM TO MAKE UP AIR SYSTEMS TYPICAL OF (3)**
2. **REPLACE ALL SWITCHES TAGGED WITH OCCUPANCY SENSOR**

PROJECT DESIGN INFORMATION

CODE REQ'MENTS	LOCATION	PLUMBING CODE
	HOUSE SPRINGS, MO	2015 INTERNATIONAL PLUMBING CODE

FIXTURE UNIT CALCULATIONS

FIXTURE TYPE	QTY	COLD WATER CWFU /FIXT	CWFU TOTAL	HOT WATER HWFU /FIXT	HWFU TOTAL	TOT. SERVICE TSFU /FIXT	TSFU TOTAL	DRAINAGE DFU /FIXT	DFU TOTAL
SK-1 (SINK)	1	2.5	2.5	2.5	2.5	3	3	2	2
SK-2 (2-COMPARTMENT SINK)	1	2.5	2.5	2.5	2.5	3	3	2	2
DG-1 (DOG GROOMING SINK)	1	2.5	2.5	2.5	2.5	3	3	2	2
MS-1 (MOP SINK)	1	2.5	2.5	2.5	2.5	3	3	3	3
FD-1 (FLOOR DRAIN)	6	---	---	---	---	---	---	4	24
TOTAL			10		10		12		35

GENERAL NOTES PLUMBING

1. INSULATION IN ACCORDANCE WITH 2015 UNIFORM PLUMBING CODE AND 2015 INTERNATIONAL BUILDING CODE
2. ALL INSULATED PIPE WHICH PENETRATES FLOORS AND FIRE WALLS SHALL BE STOPPED USING 3M INFUMESCENT FIRE STOPPING SYSTEM, INCLUDING RESTRICTING COLLAR RC-1, FS-195 INFUMESCENT WRAP AND CP-25 CAULK OR 303 PUTTY. ASSEMBLY SHALL BE INSTALLED IN ACCORDANCE WITH U.L. LISTING. ALTERNATE FIRESTOPPING SYSTEMS AS MANUFACTURED BY NEISON OR DOW CORNING SHALL BE CONSIDERED EQUAL ONLY IF THEY ARE U.L. CLASSIFIED FOR THE APPLICATION.
3. ALL OPENINGS THROUGH FLOOR SLABS SHALL BE CORE DRILLED. ALL SUCH OPENINGS SHALL BE LOCATED TO MINIMIZE THE REQUIREMENTS FOR FURRED WALL AND CHASES. THE CONTRACTOR SHALL LOCATE ALL FLOOR OPENINGS IN THE FIELD AND REVIEW PROPOSED LOCATIONS WITH THE ARCHITECT BEFORE CUTTING OR DRILLING. DO NOT CUT STRUCTURAL REINFORCING WITHOUT SPECIFIC WRITTEN DIRECTIONS FROM THE ARCHITECT/OWNER.
4. THIS CONTRACTOR SHALL SEAL WATERTIGHT ALL PENETRATIONS THRU FLOOR SLAB.
5. ALL CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF WORK SHOWN ON THESE DRAWINGS SHALL BE PERFORMED BY THIS CONTRACTOR EXCEPT AS NOTED ON THE ARCHITECTURAL DRAWINGS.
6. THIS CONTRACTOR SHALL COORDINATE ALL NEW WORK WITH ALL TRADES AND EXISTING SITE CONDITIONS BEFORE AND DURING CONSTRUCTION. PROVIDE ALL LABOR, EQUIPMENT AND MATERIAL USED.
7. THIS CONTRACTOR SHALL INSULATE HOT AND COLD PIPE. SEE SPECIFICATION.
8. EACH PIECE OF EQUIPMENT, FIXTURE, OR GROUP OF FIXTURES, AND ALL OTHER ITEMS REQUIRING WATER SUPPLY SHALL BE SEPARATELY VALVED. ALL VALVES SHALL BE LOCATED AS TO BE EASILY ACCESSIBLE WITH ACCESS PANELS AS NECESSARY.
9. ALL VENTS THRU ROOF SHALL BE LOCATED A MINIMUM OF 12' FROM ALL SUPPLY AIR INTAKES.

SYMBOLS AND ABBREVIATIONS

DUCTWORK & FITTINGS

- 24x12 — RECTANGULAR DUCT
- FLEXIBLE DUCT CONNECTION
- VD — VOLUME DAMPER
- DUCT RISE UP
- DUCT DROP DOWN
- 12"Ø — ROUND/SPIRAL DUCT
- FLEX SHOWN AS SINGLE-LINE, 12"Ø — FLEX DUCT
- VD, 24x12 — ROUND SPIN-IN TAP WITH VOLUME DAMPER
- 24x12 — DUCT REDUCER FITTING
- 24x12 — DUCT SQUARE TO ROUND REDUCER FITTING
- 24x12 UP — DUCT CHANGE IN ELEVATION UP
- 24x12 DN — DUCT CHANGE IN ELEVATION DOWN
- 24x12 — RECTANGULAR ELBOW WITH TURNING VANES
- RECTANGULAR TEE WITH TURNING VANES

AIR DEVICES

- CEILING SUPPLY DIFFUSER
- CEILING RETURN GRILLE
- CEILING EXHAUST GRILLE
- SURFACE MOUNTED SUPPLY GRILLE (DOUBLE DEFLECTION)
- SURFACE MOUNTED SUPPLY GRILLE (SINGLE DEFLECTION)
- SURFACE MOUNTED RETURN/EXHAUST GRILLE

HVAC CONTROLS

- S — SENSOR
- T — THERMOSTAT
- H — HUMIDISTAT
- P — ROOM PRESSURE SENSOR
- CONTROL WIRING
- FIRE DAMPER (FD) MOUNTED IN VERTICAL POSITION (WALL)
- FIRE DAMPER (FD) MOUNTED IN HORIZONTAL POSITION (FLOOR)
- FIRE/SMOKE DAMPER (F/SD)
- DD — DUCT MOUNTED SMOKE DETECTOR

PIPING AND FITTINGS

- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER RETURN
- CWS — CONDENSER WATER SUPPLY
- CWR — CONDENSER WATER RETURN
- HWS — HEATING HOT WATER SUPPLY
- HWR — HEATING HOT WATER RETURN
- CD — CONDENSATE DRAIN
- G — NATURAL GAS
- RL — REFRIGERATION LIQUID
- RS — REFRIGERATION SUCTION
- FLOW DIRECTION
- ISOLATION VALVE
- CHECK VALVE
- BUTTERFLY VALVE
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- PIPE RISE
- PIPE DROP
- CONTROL VALVE (2-WAY)
- CONTROL VALVE (3-WAY)
- UNION
- PRESSURE GAUGE
- THERMOMETER
- CIRCUIT SETTER (CS, 15 — GPM)
- STRAINER
- BACKFLOW PREVENTER

MISC. SYMBOLS

- KEYED NOTE
- DIFFUSER TAG, CFM
- EQUIPMENT TYPE, NUMBER
- CONNECT TO EXISTING
- DETAIL NUMBER, SHEET NUMBER
- RISER NUMBER

ABREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
B.O.D.	BOTTOM OF DUCT
DN	DOWN
E.C.	ELECTRICAL CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANCIAL CONTRACTOR
M.D.	MOTORIZED DAMPER
N.T.S.	NOT TO SCALE
U.T.R.	UP THRU ROOF
V.D.	MANUAL VOLUME DAMPER

PLUMBING SYSTEMS

- CW — DOM. COLD WATER
- HW—110° — HOT WATER (110°)
- HW—140° — HOT WATER (140°)
- FCW — FILTERED COLD WATER
- HWR — HOT WATER RETURN
- SAN — SANITARY SEWER (BELOW GRADE)
- SAN — SANITARY SEWER (ABOVE GRADE)
- V — VENT
- GW — GREASE WASTE (BELOW GRADE)
- GW — GREASE WASTE (ABOVE GRADE)
- ST — STORM WATER (BELOW GRADE)
- ST — STORM (ABOVE GRADE)
- F — FIRE PROTECTION SUPPLY (BELOW GRADE)
- F — FIRE PROTECTION SUPPLY (ABOVE GRADE)
- PO — POTABLE WATER
- D — DRAIN

PLUMBING SYMBOLS

- FLOW DIRECTION
- ISOLATION VALVE
- CHECK VALVE
- BUTTERFLY VALVE
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- PIPE RISE
- PIPE DROP
- UNION
- PRESSURE GAUGE
- THERMOMETER
- STRAINER
- BACKFLOW PREVENTER
- SIAMESE CONNECTION
- FIRE HOSE VALVE
- FLOOR CLEANOUT
- FLOOR DRAIN
- FLOOR SINK
- WALL CLEANOUT
- TRAP
- ROOF DRAIN

PLUMBING ABREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
DN	DOWN
E.C.	ELECTRICAL CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANCIAL CONTRACTOR
N.T.S.	NOT TO SCALE
U.T.R.	UP THRU ROOF
GWH	GAS WATER HEATER
EWH	ELECTRIC WATER HEATER
MSB	MOP SINK BASIN
FD	FLOOR DRAIN
FS	FLOOR SINK
HD	HUB DRAIN
WC	WATER CLOSET
UR	URINAL
LAV	LAVATORY
SK	SINK
TMV	THERMOSTATIC MIXING VALVE
RD	ROOF DRAIN
HB	HOSE BIBB
FPHB	FROST PROOF HOSE BIBB
TW	TEMPERED WATER
DF	DRINKING FOUNTAIN
EWC	ELECTRIC WATER COOLER
IE	INVERT ELEVATION

SEAL:

Patrick OBrien

Digitally signed by Patrick OBrien Date: 2020.04.16 11:32:24 -05'00'

MISSOURI CERTIFICATE OF AUTHORITY #: E-2011001315

PROFESSIONAL ENGINEER #: MO-25069

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The Professional Engineer's seal affixed to this sheet indicates that the named Engineer has prepared or directed the preparation of the material shown only on this sheet. Other drawings & documents not exhibiting this seal shall not be considered prepared by or the responsibility of the undersigned.

BACON COMMERCIAL DESIGN LLC
PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

Dynamic ENGINEERED SYSTEMS, INC.

MEP MODIFICATIONS FOR:

JEFFERSON COUNTY MISSOURI ANIMAL RESOURCE CENTER

4848 STATE ROUTE 30
HOUSE SPRINGS, MO

REVISIONS:

TAG	DESCRIPTION
0	FOR BIDDING & PERMIT REVIEW 04/15/20 FOR CONSTRUCTION WITH APPROVED PERMITS

PROJECT #:	BAC-19-243
DATE:	01/06/20
DRAWN BY:	BM
DESIGNED BY:	POB
CHECKED BY:	POB
SHEET:	MEP1.0

EXISTING ELECTRICAL PANEL SCHEDULE

MDP — ELECTRICAL PANEL SCHEDULE

SERVICE: 120/208V, 3ph, 4W+GND | BUSS RATING: 800A MCB | FEEDERS: UTILITY
TYPE : SQUARE D (NQOD) or EQUAL | A.I.C RATING: 22000 | MOUNTING: SURFACE MOUNT

EQUIP NO	DESCRIPTION	NOTE	AMP	LOAD VA	USE	Wire H	Wire N	CB/PH	A	B	C	CB/PH	Wire H	Wire N	USE	LOAD VA	AMP	NOTE	DESCRIPTION	EQUIP NO
	PANEL EM		225	29100	E							21400			E					
				27600	E			350				19600			E				PANEL M1	
				11500	E							15400			E					
	SPARE		60	1800	E			100											SPACE	
	SPARE			1800	E														SPACE	
	SPARE			1800	E														SPACE	
	PANEL DA1		225	7400	E			225											SPACE	
				6300	E														SPACE	
				6300	E														SPACE	
	PANEL DB1		225	7400	E			225											SPACE	
				6300	E														SPACE	
				6300	E														SPACE	
	PANEL DM2		225	7400	E			225											SPACE	
				6300	E														SPACE	
				6300	E														SPACE	
	PANEL A	99	225	7400	E			225				19600	101		E				PANEL M1	
				6300	E							15400			E					
				6300	E															
	PANEL B	102	225	7400	E			225				19600	107		E				PANEL K	
				6300	E							15400			E					
				6300	E															

PHASE 'A': 87300 VA
PHASE 'B': 83300 VA
PHASE 'C': 83600 VA

TOTAL CONNECTED LOAD: 254400 VA
TOTAL CONNECTED AMPS: 735.3 AMPS
TOTAL DEMAND LOAD: 139760 VA
TOTAL DEMAND AMPS: 441.2 AMPS

NOTES:
HACR: HACR BREAKER
LO: LOCKED CIRCUIT BREAKER
IG: ISOLATED GROUND

M1 — ELECTRICAL PANEL SCHEDULE

SERVICE: 120/208V, 3ph, 4W+GND | BUSS RATING: 225A MCB | FEEDERS: MDP
TYPE : SQUARE D (NQOD) or EQUAL | A.I.C RATING: 35000 | MOUNTING: RECESSED

EQUIP NO	DESCRIPTION	NOTE	AMP	LOAD VA	USE	Wire H	Wire N	CB/PH	A	B	C	CB/PH	Wire H	Wire N	USE	LOAD VA	AMP	NOTE	DESCRIPTION	EQUIP NO

HVAC NOTES:

NOTE: MANUFACTURERS' NAMES ON WHICH THIS SPECIFICATION IS BASED INDICATE THE MINIMUM QUALITY OF PRODUCT REQUIRED. SUBSTITUTION MAY BE MADE TO THOSE SPECIFIED IF DEEMED EQUIVALENT BY THE OWNER'S REPRESENTATIVE. ALL WORK AND PRODUCTS SHALL MEET THE REQUIREMENTS OF THE OWNER/LANDLORD AND GOVERNING CODES.

ALL WORK SHALL BE PERFORMED IN CONFORMANCE WITH ALL APPLICABLE CODES AND THE LANDLORD'S MINIMUM REQUIREMENTS AS STATED HEREIN OR OTHERWISE INDICATED BY THE OWNER/LANDLORD.

BASIC MECHANICAL REQUIREMENTS:

SHOP DRAWINGS AND PRODUCT INFORMATION WILL BE REQUIRED FOR ALL EQUIPMENT AND MAJOR MATERIAL ITEMS. SUBMIT SHOP DRAWINGS AND PRODUCT INFORMATION FOR ENGINEER'S REVIEW.

BASIC INSTRUCTIONS FOR ROUGH-INS, CUTTING AND PATCHING AND CONTRACTOR COORDINATION WITH OTHER TRADES FOR INSTALLATION OF MECHANICAL EQUIPMENT.

MULTIPLE PRODUCTS, TO ALL BE PROVIDED NEW AND BY SAME MANUFACTURER.

CONTRACTOR WILL PROVIDE COMPLETE O&M MANUALS FOR ALL EQUIPMENT AND SELECTED MATERIALS PROVIDED. MANUALS TO INCLUDE INSTALLATION, OPERATION AND REPAIR MANUALS FOR ALL EQUIPMENT INSTALLED TO INCLUDE PARTS LISTING, LOCAL SUPPLIERS, ETC.

CONTRACTOR AND SELECTED SUPPLIERS ARE REQUIRED TO PROVIDE SITE TRAINING SESSIONS FOR ALL MAJOR EQUIPMENT AND CONTROL SYSTEMS.

SEE ARCHITECTURAL GENERAL AND SPECIAL CONDITIONS. ALL CONDITION REQUIREMENTS SHALL APPLY UNLESS OTHERWISE NOTED.

ALL WORK SHALL BE PERFORMED AS INDICATED ON DRAWINGS UNLESS FIELD CONDITIONS REQUIRE MINOR CHANGES BE MADE. MINOR CHANGES SHALL BE MADE WITH NO ADDITIONAL COST.

ALL WORK SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE OF THE WORK BY THE OWNER.

ACTUAL LOCATIONS OF OWNER/LANDLORD'S SERVICES MUST BE FIELD VERIFIED. CHANGES TO CONFORM TO ACTUAL POINTS OF CONNECTION SHALL BE MADE AT NO ADDITIONAL COST.

CONTRACTOR SHALL PREPARE AND SUBMIT AS-BUILT DRAWINGS TO THE OWNER AND THE LANDLORD. AS-BUILT DRAWINGS SHALL INDICATE THE ACTUAL MANUFACTURER OF THE EQUIPMENT THAT WAS INSTALLED, THE EXACT LOCATION OF THE EQUIPMENT AND PERTINENT CAPACITIES FOR HEATING, COOLING, ETC.

EQUIPMENT, FIXTURES, AND ACCESSORIES SHALL NOT BE SUPPORTED FROM CEILING, SOFFIT, NEUTRAL PIERS, PIPING, DUCTWORK, METAL ROOF DECK, LATERAL BRACING, BRIDGING OR CONDUIT. ITEMS SHALL ONLY BE SUPPORTED FROM STRUCTURE WHICH HAS BEEN APPROVED BY THE OWNER/LANDLORD FOR SUPPORT.

ALL ROOF WORK PENETRATIONS AND REPAIRS SHALL BE TOTALLY PERFORMED BY ONLY THOSE ROOFING CONTRACTORS APPROVED BY THE OWNER/LANDLORD. THIS CONTRACTOR SHALL ONLY EMPLOY ROOFING CONTRACTORS APPROVED BY THE LANDLORD FOR ALL ROOF WORK REQUIRED BY THE TENANT'S APPROVED DESIGN.

INSTALLATION OF ROOF MOUNTED EQUIPMENT SHALL BE COORDINATED WITH THE LANDLORD'S DESIGNATED REPRESENTATIVE.

DEFICIENCIES AND NON-CONFORMING ITEMS SHALL BE CORRECTED BY THE CONTRACTOR. FAILURE TO CORRECT SUCH ITEMS SHALL PERMIT THE OWNER/LANDLORD TO CORRECT SAME AT A COST TO THE CONTRACTOR.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL PERMITS AND PAYING FOR SAME. HE SHALL INCLUDE IN HIS BID CHARGES FOR ALL FEES ASSOCIATED WITH THE CONSTRUCTION OF THE SPACE INCLUDING BUT NOT LIMITED TO LOCAL, COUNTY, OR STATE SERVICE CHARGES AND PERMIT FEES, AND OWNER/LANDLORD'S UTILITY AND/OR EQUIPMENT CHARGES.

MATERIALS

ALL MATERIALS SHALL BE NEW AND OF RECOGNIZED COMMERCIAL QUALITY. USED MATERIALS WILL NOT BE PERMITTED.

DUCTWORK

RECTANGULAR DUCTWORK:

ALL DUCTWORK (EXCEPT FLEXIBLE DUCTWORK) SHALL BE GALVANIZED SHEET METAL, FABRICATED AND INSTALLED IN STRICT ACCORDANCE WITH THE LATEST EDITION OF SMACNA - "HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE".

DUCTWORK 18" WIDTH AND LARGER SHALL BE CROSSBROKEN OR RIBBED AND STIFFENED SO THAT IT WILL NOT "BREATHE", RATTLE, VIBRATE OR SAG.

ROUND DUCTWORK:

ALL ROUND SUPPLY, RETURN AND EXHAUST DUCTWORK SHALL BE SEALED GRIP TITE, IRON GRIP OR EQUAL.

THE CONTRACTOR MAY, AT HIS OPTION, CONVERT ANY OR ALL RECTANGULAR DUCT WORK TO ROUND PROVIDED THAT THE PROJECT SPACE LIMITAIONS ARE PROPERLY ADDRESSED AND THAT THE OVERALL SYSTEM DESIGN STATIC PRESSURE NOT BE EXCEEDED.

FITTINGS:

UNLESS OTHERWISE NOTED, ALL DUCT AND FITTINGS SHALL BE CONSTRUCTED PER SMACNA'S DUCT CONSTRUCTION STANDARDS (+10 IN W.G.) SHOWN IN THE FOLLOWING TABLE:

DIAMETER (INCHES)	GALVANIZED SPIRAL DUCT	GALVANIZED FITTINGS
3 - 14	26	24
16 - 26	24	22
28 - 36	22	20
38 - 50	20	20

FITTINGS:

ALL FITTINGS ENDS SHALL BE CALIBRATED TO MANUFACTURER'S PUBLISHED DIMENSIONAL TOLERANCE STANDARD AND ASSOCIATED SPIRAL DUCT.
ALL FITTING ENDS FROM 3" TO 24" DIA. SHALL HAVE ROLLED OVER EDGES FOR ADDED STRENGTH AND RIGIDITY.
ALL ELBOWS FROM 3" AND 12" DIA SHALL BE 2 PIECE DIE STAMPED AND CONTINUOUSLY STITCH WELDED. ALL ELBOWS 14" DIA AND LARGER SHALL BE STANDING SEAM GORELOCK CONSTRUCTION AND INTERNALLY SEALED.
THE RADIUS OF ALL 90°AND 45°ELBOW SHALL BE 1.5 TIMES THE ELBOW DIAMETER, UNLESS OTHERWISE NOTED ON THE CONTRACT DOCUMENTS TO BE 1.0 TIMES THE ELBOW DIAMETER. THE RADIUS OF ALL 15°,30°AND 60°ELBOWS SHALL BE 1.0 TIMES THE ELBOW DIAMETER.
ALL FITTINGS THAT ARE OF EITHER SPOT WELDED OR BUTTON PUNCHED CONSTRUCTION SHALL BE INTERNALLY SEALED. WHEN CONTRACT DOCUMENTS REQUIRE DIVIDED FLOW FITTINGS, ONLY FULL BODY FITTINGS WILL BE ACCEPTED.
DAMPER SHALL BE FITTING SIZED TO SLOP INTO SPIRAL DUCT. DAMPER SHALL HAVE THE FOLLOWING FEATURES:

a. LOCKING QUADRANT WITH BLADE POSITION INDICATOR
b. 2" SHEET METAL INSULATION STAND-OFF
c. INTEGRAL SHAFT/BLADE ASSEMBLY
d. SHAFT MOUNTED, LOAD BEARING BUSHINGS
e. GASKET SHAFT PENETRATIONS TO MINIMIZE LEAKAGE

SPIRAL DUCT:

SPIRAL DUCT SHALL BE CALIBRATED TO MANUFACTURER'S PUBLISHED DIMENSIONAL TOLERANCE STANDARD.
ALL SPIRAL DUCT 14" DIA. AND LARGER SHALL BE CORRUGATED FOR ADDED STRENGTH AND RIGIDITY.
SPIRAL SEAM SLIPPAGE SHALL BE PREVENTED BY MEANS OF A FLAT SEAM AND A MECHANICALLY FORMED INDENTATION EVENLY SPACED ALONG THE SPIRAL SEAM.
FLEXIBLE DUCTWORK
ALL FLEXIBLE DUCTWORK SHALL HAVE AN IMPERVIOUS INNER CORE WITH WIRE REINFORCEMENT. THE INNER DUCT SHALL BE COVERED WITH 1.5" THICK FIBERGLASS DUCT INSULATION WITH A POLYETHYLENE VAPOR-PROOF JACKET. FLEXIBLE DUCT SHALL BE UL-181 LISTED, CLASS 1, AND SHALL MEET ALL APPLICABLE CODES AND THE REQUIREMENTS OF THE OWNER/LANDLORD.
FITTINGS TO CONNECT THE FLEX DUCT TO THE TRUNK DUCT SHALL BE OF THE 45° LEAD-IN TYPE PER THE LATEST OF SMACNA STANDARDS AND SHALL HAVE AN OPPOSED BLADE VOLUME DAMPER, SQUARE-TO-ROUND TRANSITION AND SHALL HAVE THE SAME FREE AREA AS THE SPECIFIED FLEX DUCT.
FLEX DUCT SHALL BE THE PRODUCT OF AN ESTABLISHED MANUFACTURER OF SUCH PRODUCTS AND EQUIVALENT TO CERTAINTEED MODEL G-25, WIREMOLD WGC, OR PPG GOSSFLEX.

PIPING:

PIPING SUPPORTS PER MSS-69. ADJUSTABLE CLEVIS-TYPE HANGERS FOR SINGLE PIPES, TRAPEZE-TYPE FOR MULTIPLE PIPE RUNS.
REQUIRED PIPING, DUCTWORK, AND EQUIPMENT TO BE SEISMIC-BRACED.
PRE-MANUFACTURED MATERIALS BY B-LINE, MASON INDUSTRIES, LOOS, GRIPLE, OR APPROVED EQUAL.

PIPING TO HAVE VINYL LABELS IDENTIFYING SYSTEM AND DIRECTION OF FLOW. LABELS PLACED EVERY 25 FEET IN EQUIPMENT ROOMS, AT MAJOR EQUIPMENT, AT WALLS, AND AT ACCESS PANELS.
HEAT PUMP LOOP PIPING TO BE TYPE "L" HARD-DRAWN COPPER CAN BE SUBSTITUTED FOR 2 INCHES AND SMALLER, WHEN SOLDERED WITH SILVER-BEARING SOLDER.
VALVES TO BE BRONZE BALL BODY, 1/4-TURN BALL VALVES FOR 2 INCHES AND BELOW.
STRAINERS TO BE CAST IRON BODY, "Y" TYPE WITH STAINLESS STEEL SCREENS.

INSULATION:

ALL RECTANGULAR SUPPLY AND RETURN AIR DUCTS SHALL BE INSULATED INTERNALLY UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS. INTERNAL INSULATION SHALL BE 1" THICK FIBERGLASS DUCT LINER WITH A K-FACTOR OF .25 AT 75°F MEAN, A DENSITY OF 2.75 LB./C.F., BE SUIT- ABLE FOR UP TO 2500 FPM VELOCITY AND HAVE A MINIMUM 6.0 INSTALLED R-VALUE.

ALL DUCT DIMENSIONS ON DRAWINGS ARE FREE AREA AND SHALL BE INCREASED FOR DUCT LINER.
ALL ROUND SUPPLY AIR DUCTWORK (EXCEPT FLEXIBLE DUCTS) SHALL BE INSULATED EXTERNALLY UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS. EXTERNAL DUCT INSULATION (DUCT WRAP) SHALL BE 2" THICK FIBERGLASS DUCT WRAP WITH VINYL OR FSK FACING. DUCT WRAP SHALL HAVE A K-FACTOR OF .27 AT 75°F MEAN, A DENSITY OF 1.0 LB./C.F AND A MINIMUM 6.0 INSTALLED R-VALUE.

ALL DUCT INSULATION SHALL BE UL LABELED FOR FIRE AND SMOKE RATINGS WITH A MAXIMUM FLAME SPREAD RATING OF 25 AND A MAXIMUM SMOKE DEVELOPED RATING OF 50. DUCT INSULATION SHALL COMPLY WITH ALL APPLICABLE ASHRAE AND SMACNA STANDARDS..
ALL DUCTWORK EXTERIOR TO THE CONDITIONED SPACE SHALL BE LINED, WRAPPED OR KOOLDUCT WITH AN EQUIVALENT VALUE OF R=8.0 AS REQUIRED BY THE ENERGY CODE.

DUCT INSULATION SHALL BE EQUAL TO PRODUCTS MANUFACTURED BY CERTAINTEED AND SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
EQUIPMENT MOUNTING BE HUNG FROM SLAB ABOVE WITH FLEXIBLE CONNECTIONS TO DUCT AND PIPING.
ALL PIPING TO BE INSULATED USING RIGID MOLDED, GLASS FIBER INSULATION CONFORMING TO ASTM C547 WITH "K" VALUE OF 0.24 AT 75EF; ASTM C335.
INSULATION JACKETING TO BE TYPE I, MULTI-PURPOSE, PER ASTM C921, WHITE KRAFT PAPER REINFORCED WITH GLASS FIBER YARN AND BONDED TO ALUMINIZED FILM.
MAXIMUM FLAME SPREAD: ASTM E84; 25. MAXIMUM SMOKE DEVELOPED: ASTM 384; 50.
INSULATE THE FOLLOWING SYSTEMS:

- COLD WATER, HOT WATER AND HOT WATER RETURN PIPING

AIR DEVICES:

CEILING DIFFUSERS SHALL HAVE LOUVERED FACE WITH A FRAME STYLE COMPATIBLE WITH THE TYPE OF CEILING USED. IN GENERAL, DIFFUSERS SHALL BE SUITABLE FOR LAY-IN T- BAR CEILING. THE DIFFUSER FACE SIZE OR FACE PLATE SIZE SHALL BE OF THE SAME NOMINAL SIZE AS THE CEILING MODULE. DIFFUSERS SHALL HAVE ANTI-SMUDGE CHARACTERISTICS.

SIDEWALL AND DUCT MOUNTED SUPPLY GRILLES SHALL HAVE A FRAME SUITABLE FOR SURFACE MOUNTING AND INDIVIDUAL ADJUSTABLE BLADES ARRANGED ON 3/4" CENTERS TO PROVIDE A FULLY ADJUSTABLE DOUBLE DEFLECTION AIR FLOW PATTERN. THE FRONT BLADES SHALL BE PARALLEL TO THE LONG DIMENSION OF THE GRILLE.
CEILING RETURN AIR GRILLES SHALL HAVE AN EGG-CRATE FACE WITH A FRAME STYLE SUITABLE FOR LAY-IN T-BAR CEILING OR SURFACE MOUNTING IN ACOUSTICAL TILE OR DRYWALL CEILING.
SIDEWALL AND DUCT MOUNTED RETURN AIR OR TRANSFER AIR GRILLES SHALL HAVE A FRAME SUITABLE FOR SURFACE MOUNTING AND 0° FIXED BLADE DEFLECTION WITH BLADES ARRANGED ON 3/4" CENTERS. THE GRILLE BLADES SHALL BE PARALLEL TO THE LONG DIMENSION OF THE GRILLE. AN OPPOSED BLADE VOLUME DAMPER SHALL BE PROVIDED AT ALL SUPPLY AIR AND DUCTED RETURN AIR DEVICES. NO DAMPER IS REQUIRED AT NON-DUCTED RETURN OR TRANSFER AIR GRILLES.
ALL AIR DEVICES SHALL BE FURNISHED IN STANDARD WHITE FINISH AND SHALL BE PAINTED TO MATCH ADJACENT SURFACES. SEE SCHEDULE.

CONTROLS:

CONTROLS FOR SYSTEMS SHALL BE COMPATIBLE WITH EQUIPMENT INSTALLED, SUPPLIED, OR SPECIFIED IN THESE DRAWINGS.

CONTROLS FOR BUILDING AUTOMATION SYSTEMS SHALL BE COMPATIBLE WITH INSTALLED EQUIPMENT. FOR SYSTEMS THAT ARE PROGRAMMABLE, THE INSTALLING CONTRACTOR SHALL COORDINATE WITH THE OWNER/GC FOR SPECIFIC REQUIREMENTS FOR OCCUPIED AND UNOCCUPIED SPACES. BAS SYSTEMS SHALL BE INSTALLED AND PROGRAMMED TO MEET ASHRAE AND ENERGY CODE STANDARDS.

SYSTEMS/EQUIPMENT TIED TO EXISTING BAS SYSTEMS SHALL BE COMPATIBLE WITH EXISTING SYSTEMS AND COORDINATED WITH BUILDING SYSTEMS MANAGER PRIOR TO ANY INSTALLATION.

STAND ALONE SYSTEMS TO BE CONTROLLED BY PROGRAMMABLE TYPE T-STATS AND COORDINATED WITH OWNER REQUIREMENTS.

TESTING AND BALANCING:

FINAL SYSTEM TESTING AND BALANCING TO BE ACCOMPLISHED BY AABC-CERTIFIED CONTRACTOR.
TESTING TO INCLUDE VERIFICATION OF PROPER OPERATION OF ALL SYSTEMS, PRESSURE RELATIONSHIPS, AND DESIGN QUANTITIES.
FINAL REPORT TO BE INCLUDED IN O&M MANUALS FOR FUTURE REFERENCE.

PLUMBING NOTES:

HANDICAP SPECIFICATIONS: ADA (AMERICANS WITH DISABILITIES ACT) 2010 STANDARDS AND ANSI A117.1
(REFER TO ARCHITECTURAL DRAWINGS FOR EXACT CLEARANCE DIMENSIONS)

GENERAL

THE WORK COVERED BY THESE SPECIFICATIONS INCLUDES BUT IS NOT LIMITED TO PROVIDING ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO COMPLY WITH REQUIREMENTS OF THIS FACILITY.

PLUMBING FIXTURES

WATER CLOSET (STANDARD) - AS IDENTIFIED ON PLANS:
HEIGHT OF WATER CLOSET SEAT SHALL BE 17" MIN. & 19" MAX. FORCE REQUIRED TO ACTIVATE FLUSH VALVE LEVER TO BE 5 LBS. MAXIMUM (4.16.5)
GRAB BARS - COORDINATE WITH GENERAL CONTRACTOR: GRAB BARS FOR THE PHYSICALLY HANDICAPPED, AS REQUIRED: 18 GAUGE, TYPE 304 STAINLESS STEEL WITH NON-SLIP GRIPPING SURFACE AND EXPOSED MOUNTING PLATES.
ONE AT SIDE 42" LONG EXTENDING IN FRONT OF WATER CLOSET; ONE AT REAR 36" LONG CENTERED ON WATER CLOSET; BOTH MOUNTED 36" ABOVE FLOOR.
BARS SHALL BE 1-1/4" TO 1-1/2" IN DIAMETER WITH 1-1/2" CLEARANCE TO WALL.
BAR FASTENERS AND MOUNTING SUPPORT SHALL WITHSTAND 250 LBS/FT. BENDING, SHEAR, AND TENSION.
LAVATORY - AS IDENTIFIED ON PLANS (WHEN SPECIFIED BARRIER FREE, MOUNT BOTTOM OF RIM @29" A.F.F.):
PROVIDE 30"X48" CLEAR FLOOR SPACE FOR FORWARD APPROACH, INCLUDING KNEE AND TOE SPACE. PROVIDE CLEAR SPACE BENEATH LAVATORY 29" HIGH X 30" WIDE X 8" DEEP (KNEE SPACE) AND 9" HIGH FROM THE FLOOR X 30" WIDE X 17" DEEP FROM FRONT OF LAVATORY (TOE SPACE).
EXPOSED WATER AND DRAIN PIPING BELOW LAVATORY SHALL BE INSULATED WITH "TRUEBRO" (OR EQUAL) PIPE COVERS.
FAUCET CONTROLS SHALL BE OF THE TYPE NOT REQUIRING TIGHT GRASPING, PINCHING, OR TWISTING OF WRIST AND AN OPERATING FORCE NOT EXCEEDING 5 LBS.
SELF-CLOSING VALVES SHALL BE OF THE TYPE REMAINING OPEN FOR AT LEAST 10 SECONDS.
CLEANOUTS - SHALL BE AS MANUFACTURED BY JOSAM, ZURN,OR EQUAL, AND SHALL BE INSTALLED AT ALL BENDS, ANGLES, AND ENDS OF ALL WASTE AND SEWER LINES, AS CALLED FOR ON THE DRAWINGS AND AS REQUIRED BY LOCAL CODES. ALL CLEANOUTS SHALL BE FLUSH WITH FINISHED FLOOR TO GRADE, AND IN ALL CASES, SHALL BE PROVIDED WITH SUFFICIENT SPACE FOR RODDING.
MOP SINK - AS IDENTIFIED ON PLANS. ONE PIECE MOLDED STONE WITH 2" DRAIN, VINYL BUMPERGUARD ON 3 SIDES. SERVICE FAUCET 8" CTR. TO CTR. WITH VACUUM BREAKER HOSE AND HOSE BRACKET. PROVIDE 2" VENTED WASTE WITH "P-TRAP"; ½" HOT AND COLD WATER SERVICE. CAULK WITH A SILICONE SEALANT ALONG WALLS. MOUNT MOP HANGER AT 4'-0" A.F.F.
FLOOR DRAIN - AS IDENTIFIED ON PLANS. CAST IRON DRAIN WITH NICKEL-BRONZE ADJUSTABLE STRAINER; INSIDE CAULD. OUTLET AND CLAMPING DEVICE WHERE REQUIRED. PROVIDE WITH TRAP PRIMER TAP AND TRAP PRIMER WHERE INDICATED.
NOTE: OWNER'S GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER INSTALLATION OF ALL TOILET ACCESSORIES INCLUDING SUPPORT BLOCKING INSIDE WALL.

MATERIALS

SANITARY SEWER - CAST IRON, PVC, OR COPPER PIPING MAY BE USED EXCEPT THAT ALL PIPING BELOW GRADE SHALL BE CAST IRON, OR PVC. VENTS TWO INCHES (2") IN SIZE AND SMALLER MAY BE EITHER SCHEDULE 40 GALVANIZED STEEL OR COPPER PIPING.
DOMESTIC WATER AND HOT WATER PIPING TO BE COPPER TYPE "L" INSULATED WITH ARMAFLEX OR EQUIVALENT INSULATING TO A THICKNESS OF ½" THRU 1". SEE TABLE SHEET MEP 1.0
GAS PIPING (WHEN REQUIRED) SHALL BE BLACK STEEL SCHEDULE 40 WITH SCREWED FITTINGS.

PIPING

PIPING AND FITTINGS SHALL BE OF THE WEIGHTS AND TYPES SHOWN ON DRAWINGS. SIZES SHOWN ON ON DRAWINGS ARE NOMINAL PIPE SIZES.
ALL PIPING SHALL BE INSTALLED PARALLEL TO, OR AT RIGHT ANGLES WITH THE BUILDING WALLS AND PARTITIONS AND SHALL BE INSTALLED WITH THE PROPER PITCH.
ALL PIPING SHALL BE UPENDED AND POUNDED TO REMOVE ANY FOREIGNER PRESENT AND SHALL BE SWABBED IF NECESSARY.

PREPARING PIPE

SCREWED PIPE SHALL BE INSTALLED WITH PIPE COMPOUND APPLIED TO THE MALE THREAD WITH NOT MORE THAN TWO THREADS LEFT EXPOSED. PIPE SHALL BE REAMED AFTER THREADING.
BELOW GRADE SANITARY PIPING SHALL BE CAST IRON PIPE AND SHALL BE INSTALLED WITH ONE THIRD OF THE HUB CAULKED WITH FIRST QUALITY OAKUM, AND THE REMAINDER FILLED WITH FIRST QUALITY CAULKING AT ONE POURING AND CAULKED TIGHT.
COPPER JOINTS SHALL BE MADE UP WITH 95-5 SOLDER.

HANGERS AND SUPPORTS

HORIZONTAL PIPING SHALL BE SUPPORTED AT INTERVALS NOT TO EXCEED 10'-0" WITH SWIVEL SPLIT PIPE HANGERS EQUAL TO CRANE #199F OR GRINNELL #104. VERTICAL PIPING SHALL BE SUPPORTED BY MEANS OF WROUGHT IRON CLAMPS SUSPENDED FROM THE UNDER-SIDE OF STRUCTURE WITH HANGER RODS. REFER TO HANGER SCHEDULE FOR ALL OTHER PIPE HANGER SIZES AND SUPPORT LENGTHS.

VALVES

ALL VALVES SHALL BE BRASS AND MANUFACTURED BY CRANE, NIBCO, STOCKHAM, LUNKENHEIMER, NORDSTROM, GRINNELL OR EQUAL.

ROUGH-INS

FOR SECOND LEVEL STORES, THE GENERAL CONTRACTOR SHALL ROUTE ALL LINES REQUIRED FOR PLUMBING ROUGH-INS TIGHT AGAINST THE UNDERSIDE OF THE SECOND FLOOR LEVEL WITH ALLOWANCE FOR SLOPE. SECOND FLOOR SLAB SHALL BE CORE DRILLED AS REQUIRED TO INSTALL THESE ITEMS AT THE LOCATIONS SHOWN ON THE PLANS. COORDINATE WITH LOWER LEVEL TENANTS.

TESTING AND ADJUSTING

CONTRACTOR SHALL DEMONSTRATE OPERATION OF PIPING SYSTEM TO FULL SATISFACTION OF TENANT. ALL PIPING SHALL WITHSTAND AIR PRESSURE TESTING PER GOVERNING CODES.

FIRE SPRINKLER NOTES:

ALL NEW SYSTEMS SHALL BE DESIGNED AND COORDINATED WITH CURRENT NFPA STANDARDS AS ADOPTED BY GOVERNING CODES AND FIRE MARSHAL OF MUNICIPALITY.

NEW AND EXISTING SYSTEMS SHALL MEET THE REQUIREMENTS OF NFPA AND LOCAL CODES FOR OCCUPANCY AND HAZARD CLASSIFICATION SYSTEMS MAY REQUIRE HYDRAULIC FLOW TESTING BY GOVERNING AUTHORITY TO ESTABLISH FLOW RATES TO SYSTEMS AT PEAK AND OFF PEAK DEMAND TIMES FOR LOCAL WATER DELIVERY SYSTEMS.

SYSTEMS SHOWN WITHIN THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE, I.E., PIPE SIZE, HEAD LOCATION, AND FINAL PIPE ROUTING SHALL BE PREPARED AND CALCULATED BY FIRE SPRINKLER INSTALLING CONTRACTOR TO BE REVIEWED AND APPROVED BY INSTALLING ENGINEER OF RECORD AND LOCAL AHJ "AUTHORITY HAULING JURISDICTION" PRIOR TO INSTALLATION.

SYSTEMS SHALL BE TESTED AND APPROVED BY AHJ.

FIRE PROTECTION PIPING TO BE ANCHORED AND SUPPORTED PER NFPA.

TESTING AND ADJUSTING:

CONTRACTOR SHALL DEMONSTRATE PIPE SYSTEMS TO AHJ BE MEANS OF HYDROSTATIC TESTING AND TESTING FORMS AS PER NFPA AND LOCAL AJH.

GUARANTEE

ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER DATE OF ACCEPTANCE. THE COMLETED PLUMBING SYSTEM SHALL BE FULLY OPERATIONAL AND ACCEPTANCE BY TENANT SHALL BE A CONDIDTION OF THEIS CONTRACT. ALL WORK FOUND TO BE DEFECTIVE SHALL BE REPAIRED OR REPLACED BY THIS SUBCONTRACTOR WITHOUT ADDITIONAL COST TO THE TENANT.

SEAL:

MISSOURI CERTIFICATE OF AUTHORITY #: E-2011001315
PROFESSIONAL ENGINEER #: MO-25069
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BACON COMMERCIAL DESIGN LLC
PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

Dynamic ENGINEERED SYSTEMS, INC.

MEP MODIFICATIONS FOR:
JEFFERSON COUNTY MISSOURI
ANIMAL RESOURCE CENTER
4848 STATE ROUTE 30
HOUSE SPRINGS, MO

REVISIONS:

TAG	DESCRIPTION
0	FOR BIDDING & PERMIT REVIEW 04/15/20 FOR CONSTRUCTION WITH APPROVED PERMITS

PROJECT #:	BAC-19-243
DATE:	01/06/20
DRAWN BY:	BM
DESIGNED BY:	POB
CHECKED BY:	POB
SHEET:	MEP1.2

ELECTRICAL NOTES:

WORK INCLUDES THE COMPLETE ELECTRICAL SYSTEM DEFINED BY THE DRAWING SET FOR THE PROJECT INCLUDING:

ALL MATERIALS AND EQUIPMENT SHALL CONFORM WITH THE STANDARDS OF UL, ANSI, ASTM, NFPA AND ALL LOCAL CODES (AS APPLICABLE). THE MINMUM STANDARD FOR ALL WORK IS NFPA70 (NEC) AND AS ADOPTED BY LOCAL GOVERNING CODE.

ALL WIRING MATERIALS DOWNSTREAM FROM THE METER SHALL BE COPPER. ALUMINUM WIRING IS NOT ACCEPTABLE UNDER ANY CIRCUMSTANCES.

CONCEAL ALL CONDUITS IN FLOORS, WALLS OR CEILING UNLESS OTHERWISE NOTED ON PLANS.

INCREASE WIRE SIZES AS REQUIRED TO MAINTAIN VOLTAGE DROPS OF 3% OR LESS FROM THE DISTRIBUTION PANELS.

CONTRACTOR SHALL VERIFY THE AVAILABLE FAULT CURRENT WITH THE UTILITY COMPANY AND MAKE EQUIPMENT PROVISIONS AS NECESSARY.

UNLESS OTHERWISE NOTED, NO CONDUITS SHALL BE SMALLER THAN ¾".

ALL OUTLETS AND SWITCH BOXES SHALL BE FLUSH MOUNTED UNLESS OTHERWISE NOTED.
ALL CONVENIENCE OUTLETS SHOULD BE MOUNTED AT 18" UNLESS OTHERWISE INDICATED ON PLANS. ALL SWITCHES SHALL BE 48" ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED ON PLANS.

THE ELECTRICAL LOADS SHALL BE BALANCED BETWEEN LEGS (WITH-IN 10%) AT THE TIME OF FINAL INSPECTION. FURNISH WRITTEN REPORT OF ACTUAL LOADS TO GENERAL CONTRACTOR.

USE FLEXIBLE CONDUIT TO CONNECT TO ALL VIBRATING MACHINERY SUCH AS COMPRESSORS, CONDENSERS, ETC. (MAXIMUM OF 6'-0" IN LENGTH).

ALL INTERCONNECTED DISPENSERS, CONSOLES, TERMINALS, SHALL BE ON THE SAME PHASE.

VERIFY LOCATION AND METHOD OF CONNECTIONS TO ALL EQUIPMENT WITH OWNER REPRESENTATIVE PRIOR TO ROUGH-IN.
COORDINATE MOUNTING HEIGHTS AND OUTLET LOCATIONS WITH ROUGH-IN DOCUMENTS PRIOR TO ROUGH-IN (AS APPLICABLE).

THE ELECTRICAL CONTRACTOR SHALL PROVIDE CORD AND PLUG FOR EQUIPMENT AS REQUIRED. REFER TO THE EQUIPMENT SCHEDULE.

PROVIDE MATCHING RECEPTACLE FOR ALL EQUIPMENT SUPPLIED WITH CORD AND PLUG. (NEMA ETC.)

FROM EACH ISOLATED GROUND RECEPTACLE, PROVIDE A #12 THHN (GREEN) GROUND WIRE TO THE ISOLATED GROUND (IG) BUS IN THE MDCC.

ALL WORK AND MATERIALS SHALL BE BY THE ELECTRICAL CONTRACTOR, UNLESS NOTED OTHERWISE.

LED LAY-IN LIGHT FIXTURES FINAL CONNECTION POINT SHALL BE IN 3/4" FLEX. FLEX SHALL NOT EXCEED 6' FROM J-BOX TO LIGHT FIXTURE.

ALL PANELBOARDS ARE NEW OR EXISTING.

ALL WORK AND MATERIALS SHALL BE BY THE ELECTRICAL CONTRACTOR, UNLESS NOTED OTHERWISE.

ROMEX & MC CABLE PERMITTED WHERE ALLOWED BY LOCAL CODE.

ALL SWITCHES TO BE MOUNTED AT +48" A.F.F., UNLESS OTHERWISE ON PLAN.

VERIFY THE OVERLOAD PROTECTION REQUIREMENT FROM THE EQUIPMENT SUPPLIER. PROVIDE AND INSTALL AS REQUIRED.

CONDUITS AND FITTINGS

EMT FOR SIZES UP TO 4".

FLEXIBLE CONNECTIONS TO MOTORS OR VIBRATING EQUIPMENT.

ALL EXPOSED CONDUIT BELOW 8'-0" ABOVE FLOOR WILL BE INTERMEDIATE METAL CONDUIT.

ALL CONDUITS MUST BE CONCEALED IN FINISHED AREAS AND MAY BE EXPOSED IN UNFINISHED AREAS.

ALL OPENINGS FOR CONDUIT PASSAGE WILL BE SEALED FOR SOUND, SMOKE OR FIRE PER WALL RATING.

BUILDING WIRE AND CABLE

LOW-VOLTAGE CONDUCTORS, 600 VOLTS AND BELOW.

SOLID: #10 AND SMALLER.

STRANDED: #8 AND LARGER.

TYPE THWN/THHN 90OC ANNEALED COPPER INSIDE BUILDING.

ALL BRANCH CIRCUITS WILL BE A MINIMUM OF #12 SIZE WIRE UP TO 75 FEET. A MINIMUM OF #10 WIRE WILL BE USED FOR CIRCUITS OVER 75 FEET FOR 120 VOLT SYSTEMS AND 150' FOR 277 VOLT SYSTEMS. INCREASE CONDUCTORS TO COMPENSATE A MINIMUM VOLTAGE DROP AS ALLOWED BY NEC.

ALL BRANCH CIRCUITS AND AUXILIARY SYSTEM CONDUCTORS WILL BE ANNEALED COPPER AND WILL BE COLOR-CODED PER NEC EXCEPT FOR LARGER CONDUCTORS, WHICH WILL BE IDENTIFIED BY LABEL OR COLOR AT TERMINATION AND ALL ACCESSIBLE LOCATIONS TO SAME.

ELECTRICAL BOXES

WIREWAYS, OUTLETS AND BOXES WILL BE SIZED PER NEC, GALVANIZED AND RUST-INHIBITIVE PAINTED.

OUTLETS AND SWITCHBOXES: MINIMUM 4" SQUARE BY 1-1/2" DEEP, SET BACK TO ALLOW INSTALLATION OF SQUARE CUT AND RAISED ADAPTER RING. USE GANG BOXES WHEN MORE THAN ONE DEVICE IS CALLED FOR IN ONE LOCATION FOR SWITCHES AND RECEPTACLES.

BACK-TO-BACK BOXES WILL BE OFFSET A MINIMUM OF 12".

MANUFACTURER: RACO, APPLETON, HUBBELL, OR APPROVED EQUAL.

PULL AND JUNCTION BOXES: CONCEALED FOR CONCEALED CONDUITS OR SURFACE FOR EXPOSED CONDUITS. BOXES WILL HAVE HINGED OR SCREW-ON COVERS; MOISTURE-TIGHT COVERS USED OUTDOORS. BOX LOCATIONS TO BE IDENTIFIED ON "AS-BUILT" DRAWINGS.

WIRING DEVICES

COLOR PER ARCHITECTURAL REQUIREMENTS AND OF TYPE AS FOLLOWS:
- SWITCHES: TOGGLE TYPE SINGLE, DOUBLE, THREE-WAY OR FOUR-WAY; HUBBELL #1221, 1223 20A-120/277V RATED OR APPROVED EQUAL

- CONVENIENCE OUTLETS: DUPLEX, 3-WIRE, GROUNDING TYPE, SIDE AND BACK-WIRED HUBBELL OR APPROVED EQUAL, 20A-125V RATED. EXTERIOR TYPE WILL HAVE HUBBELL #5205WO WEATHERPROOF COVERS OR APPROVED EQUAL.

- COVERPLATES: SINGLE OR GANGED TO ACCOMMODATE DEVICES. PROVIDE BLANK PLATES FOR ROUGH-IN FUTURE BOXES. IN FINISHED AREAS,UTILIZE NYLON COVERPLATES; IN UNFINISHED AREAS, UTILIZE GALVANIZED STEEL COVERPLATES.

GROUNDING

WIRE
- MATERIAL: STRANDED COPPER.
- GROUNDING ELECTRODE CONDUCTOR:SIZE TO MEET NFPA 70 REQUIREMENTS.

INSTALLATION

- PROVIDE PER NEC.
- EQUIPMENT GROUNDING CONDUCTOR: PROVIDE SEPARATE, INSULATED CONDUCTOR WITHIN EACH FEEDER AND BRANCH CIRCUIT RACEWAY. TERMINATE EACH END ON SUITABLE LUG, BUS, OR BUSHING.

EQUIPMENT WIRING SYSTEMS

CIRCUIT AND MOTOR DISCONNECTS - QUICK MAKE, QUICK-BREAK FEATURE, HEAVY-DUTY TYPE, HORSEPOWER RATED WITH NEMA TYPE 1 ENCLOSURE FOR INDOOR USE; NEMA TYPE 3R FOR OUTDOOR USE. MANUFACTURERS WILL BE SQUARE D, SIEMENS, OR GENERAL ELECTRIC.

SUPPORTING DEVICES

MATERIALS AND FINISHES: PROVIDE ADEQUATE CORROSION RESISTANCE.

PROVIDE MATERIALS, SIZES, AND TYPES OF ANCHORS, FASTENERS AND SUPPORTS TO CARRY THE LOADS OF EQUIPMENT AND CONDUIT. CONSIDER WEIGHT OF WIRE IN CONDUIT WHEN SELECTING PRODUCTS.

ANCHORS AND FASTENERS:
- CONCRETE STRUCTURAL ELEMENTS: USE PRECAST INSERT SYSTEM , EXPANSION ANCHORS AND PRESET INSERTS.
- STEEL STRUCTURAL ELEMENTS: USE BEAM CLAMPS AND WELDED FASTENERS.
- CONCRETE SURFACES: USE SELF_DRILLING ANCHORS AND EXPANSION ANCHORS.
- HOLLOW MASONRY, PLASTER, AND GYPSUM BOARD PARTITIONS: USE TOGGLE BOLTS AND HOLLOW WALL FASTENERS.
- SOLID MASONRY WALLS: USE EXPANSION ANCHORS AND PRESET INSERTS.
- SHEET METAL: USE SHEET METAL SCREWS.
- WOOD ELEMENTS: USE WOOD SCREWS.

PROVIDE ANCHORS, FASTENERS, AND SUPPORTS IN ACCORDANCE WITH NECA "STANDARD OF INSTALLATION".

DO NOT FASTEN SUPPORTS TO PIPES, DUCTS, MECHANICAL EQUIPMENT, AND CONDUIT.

DO NOT USE SPRING STEEL CLIPS AND CLAMPS.

DO NOT USE POWDER_ACTUATED ANCHORS.

DO NOT DRILL OR CUT STRUCTURAL MEMBERS.

FABRICATE SUPPORTS FROM STRUCTURAL STEEL OR STEEL CHANNEL. RIGIDLY WELD MEMBERS OR USE HEXAGON HEAD BOLTS TO PRESENT NEAT APPEARANCE WITH ADEQUATE STRENGTH AND RIGIDITY. USE SPRING LOCK WASHERS UNDER ALL NUTS.

INSTALL SURFACE_MOUNTED CABINETS AND PANEL BOARDS WITH MINIMUM OF FOUR ANCHORS.

IN WET AND DAMP LOCATIONS USE STEEL CHANNEL SUPPORTS TO STAND CABINETS AND PANEL BOARDS ONE INCH (25 MM) OFF WALL.

USE SHEET METAL CHANNEL TO BRIDGE STUDS ABOVE AND BELOW CABINETS AND PANEL BOARDS RECESSED IN HOLLOW PARTITIONS.

ELECTRICAL IDENTIFICATION

DESCRIPTION: CLOTH TYPE WIRE MARKERS.

LOCATIONS: EACH CONDUCTOR AT PANELBOARD GUTTERS, PULL BOXES AND JUNCTION BOXES.

LEGEND:
- POWER AND LIGHTING CIRCUITS: BRANCH CIRCUIT OR FEEDER NUMBER INDICATED ON DRAWINGS.
- CONTROL CIRCUITS: CONTROL WIRE NUMBER INDICATED ON SHOP DRAWINGS.

INSTALL NAMEPLATE AND LABEL PARALLEL TO EQUIPMENT LINES.

SECURE NAMEPLATE TO EQUIPMENT FRONT USING SCREWS.

SECURE NAMEPLATE TO INSIDE SURFACE OF DOOR ON PANEL BOARD THAT IS RECESSED IN FINISHED LOCATIONS.

NAMEPLATES: ENGRAVED THREE_LAYER LAMINATED PLASTIC, BLACK LETTERS ON WHITE BACKGROUND.

LOCATIONS:
- EACH ELECTRICAL DISTRIBUTION AND CONTROL EQUIPMENT ENCLOSURE.
- COMMUNICATION CABINETS.

LETTER SIZE:
- USE 1/8 INCH (3 MM)] LETTERS FOR IDENTIFYING INDIVIDUAL EQUIPMENT AND LOADS.
- USE 1/4 INCH (6 MM) LETTERS FOR IDENTIFYING GROUPED EQUIPMENT AND LOADS.

LABELS: EMBOSSED ADHESIVE TAPE, WITH 3/16 INCH (5 MM) WHITE LETTERS ON BLACK BACKGROUND. USE ONLY FOR IDENTIFICATION OF INDIVIDUAL WALL SWITCHES AND RECEPTACLES, AND CONTROL DEVICE STATIONS.

ENCLOSED MOTOR CONTROLLERS

MANUAL MOTOR STARTERS FOR MOTORS 1 HP OR LESS WITH MANUALLY OPERATED TOGGLE SWITCH EQUIPPED WITH APPROPRIATE THERMAL OVERLOADS, UNLESS OTHERWISE NOTED. ALLEN BRADLEY BULLETIN NO. 600 OR APPROVED EQUAL.

COMBINATION STARTERS: VISIBLE BLADE FUSIBLE DISCONNECT SWITCH AND MOTOR STARTER IN COMMON POSITION; NEMA TYPE 1 UNLESS EXPOSED TO WEATHER-NEMA 3R.
- STARTERS SIZED PER EQUIPMENT DATA FROM MECHANICAL CONTRACTORS WITH APPROPRIATE SIZED THERMAL OVERLOADS.
- ON/OFF DESIGNATION AND ON LOCK-OUT PROVIDED ON DISCONNECT HANDLE.

ALL STARTER COILS WILL BE 120V WITH A CONTROL TRANSFORMER OPERATED BY THE DISCONNECT AND HAVE A SECONDARY FUSE.

4. COMBINATION STARTERS BY ALLEN-BRADLEY, SIEMENS, SQUARE D, OR GENERAL ELECTRIC.

CONTACTORS

THE CONTACTORS WILL BE UNDERWRITERS' LABORATORIES LISTED UNDER UL 508. MAIN CONTACTS WILL BE DOUBLE-BREAK, CONTINUOUS-DUTY RATED 20 AMPERES TO 600 VOLTS AC, 60HZ (30 AMPERES TO 600 VOLTS AC, 60 HZ, FOR GENERAL-PURPOSE LOADS), AND BE MARKED FOR BALLAST LIGHTING (ELECTRIC DISCHARGE LAMPS), TUNGSTEN AND GENERAL-PURPOSE LOADS. LIGHTING CONTACTORS REQUIRING DERATING WHEN USED IN AN ENCLOSURE OR WITH TUNGSTEN LAMP LOADS WILL NOT BE ACCEPTABLE.

PROVIDE WITH CLAMP-TYPE, SELF-RISING TERMINAL PLATES FOR SOLDERLESS CONNECTION OF LINE, LOAD AND CONTROL CONDUCTORS. TERMINALS WILL ACCEPT A WIRE RANGE OF #18 AWG TO #10 AWG CU.

THE NUMBER OF POLES, UP TO A MAXIMUM OF 12, ON A SINGLE REMOTE CONTROL LIGHTING CONTACTOR, WILL BE PROVIDED AS INDICATED ON THE PLANS.

TWO-WIRE CONTROL MODULE - A TWO-WIRE TYPE INTERFACE CONTROL MODULE WILL BE SUPPLIED WIRED AND MOUNTED DIRECTLY TO THE CONTACTOR. THE CONTROL VOLTAGE AND WIRING WILL BE AS SHOWN ON THE DRAWINGS. THE CONTROL MODULE WILL BE UL LISTED AND BE SUITABLE FOR AN OPERATING VOLTAGE RANGE OF 80 TO 125 PERCENT OF NOMINAL AND OPERATE OVER AN AMBIENT TEMPERATURE RANGE OF 0O C TO 45OC.

INTERIOR LUMINARIES

LIGHTING FIXTURES OF QUALITY INDICATED AND AS SCHEDULED:

- COORDINATE AND PROVIDE ALL REQUIRED MOUNTING HARDWARE OF FIXTURES, I.E., YOKES, STRAPS, CHANNEL SUPPORTS, ETC.
- PROVIDE PROPER CEILING AND APPLICATION TRIMS AND SUPPORTS; COORDINATE WITH CEILING CONSTRUCTION.

TELEPHONE DATA, CABLE, POS SYSTEMS
SYSTEM TO BE EMPTY CONDUIT SYSTEM WITH PULL WIRES. QUANTITY AND SIZE AS SHOWN ON DWGS. TERMINATE ¾" CONDUIT 6" ABOVE FINISHED CEILING.

TELEPHONE AND DATA SHALL BE CAT 6. ALL PANELS, DATA OUTLETS TO BE THE SAME MANUFACTURER.

ALL CONDUCTORS SHALL BE TESTED AND CERTIFIED. ROUTE NEW SYSTEMS IN "J" HANGER SUSPENDED CABLE TRAY ABOVE LAY IN CEILINGS.

CABLE SHALL BE RG6.

FIRE ALARM SYSTEM SHALL BE 18GA. TWISTED AND SHIELDED UNLESS OTHERWISE SPECIFIED.

EXISTING BUILDING ELECTRICAL GENERAL NOTES

CIRCUIT NUMBERS ARE INDICATED ONLY TO SHOW DISTINCTION BETWEEN THE CIRCUITS AND PANELS. ELECTRICAL CONTRACTOR SHALL USE EXISTING/NEW CIRCUITS AS REQUIRED WITHOUT EXCEEDING NEC MANDATED CURRENT LIMITS AND RECOMMENDED VOLTAGE DROP LIMITS.

FOLLOW ALL THE LOCAL AMENDMENTS TO THE NEC, INCLUDING A GROUNDING CONDUCTOR IN ALL RACEWAYS.

ELECTRICAL CONTRACTOR SHALL VERIFY CEILING TYPES WITH ARCHITECTURAL DRAWINGS.

CONTRACTOR MAY AT HIS OPTION SUBSTITUTE A SIMILAR LED FIXTURE IN LIEU OF RELAMPING EXISTING FIXTURE W/LED SOURCES (IE: LAMPS). SUBSTITUTION SHALL INCLUDE ALL LABOR AND MATERIALS TO REPLACE WITH A FULLY FUNCTIONING FIXTURE. THE CONTRACTOR SHALL SUBMIT THE EXPECTED FOOT CANDLE LEVELS FOR ALL SPACES/ROOMS RECEIVING OR BEING FITTED WITH NEW LIGHTING FIXTURES AND/OR NEW LED LAMPS. AS SUCH THE CONTRACTOR SHALL SUBMIT TO THE OWNER A PHOTOMETRIC MAP OF ALL RELEVANT NEWLY LIT INTERIOR SPACES. THE PHOTOMETRIC MAP SHALL CONSIST OF A FULL BRIGHT MODEL AND AN EGRESS (EMERGENCY) FULL BRIGHT ONLY MODEL. THE EGRESS (EMERGENCY) LIGHT ONLY MODEL SHALL BE UTILIZED AND EVALUATED BY THE CONTRACTOR TO MEET THE APPLICABLE EGRESS LIGHTING LEVEL REQUIREMENTS. IN ADDITION, THE FULL BRIGHT NORMAL LIGHTING MODEL SHALL ADHERE TO THE LIGHTING LEVEL RECOMMENDATIONS OF IES (ILLUMINATING ENGINEERING SOCIETY) LATEST PUBLISHED RECOMMENDATIONS FOR APPLIED ROOM OR SPACE.

ALL EMERGENCY LIGHTS AND EXIT LIGHTS TO HAVE 90 MINUTE BATTERY BACK UP TO MEET NEC. THEY ARE ALSO ON STANDBY GENERATOR PANEL.

NEW LIGHT FIXTURES OR EXISTING LIGHT FIXTURES WITH NEW LED LIGHT SOURCE SHALL BE FULLY COMPATIBLE WITH THE LIGHTING CONTROLS. VERIFY LIGHTING FIXTURE, FIXTURE LAMP SOURCE, AND LIGHTING CONTROLS SUPPLIER.

TRACE ALL MODIFIED LIGHTING BRANCH CIRCUITS TO SOURCE PANEL AND RELABEL PANEL BOARDS CIRCUIT DIRECTORY ACCORDINGLY TO REFLECT MODIFICATIONS (IE. IDENTIFY WHICH SPACES/ROOMS ARE SERVED FROM PARTICULAR BRANCH CIRCUIT.

EGRESS LIGHTING FIXTURES "EM" AND EXIT LIGHTS "X2" SHALL BE WIRED PER NEC.

COORDINATE WITH OWNER FOR FINAL LOCATION OF LIGHTING CONTROLS (IE; OCCUPANCY SENSORS).

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BACON COMMERCIAL DESIGN LLC
PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

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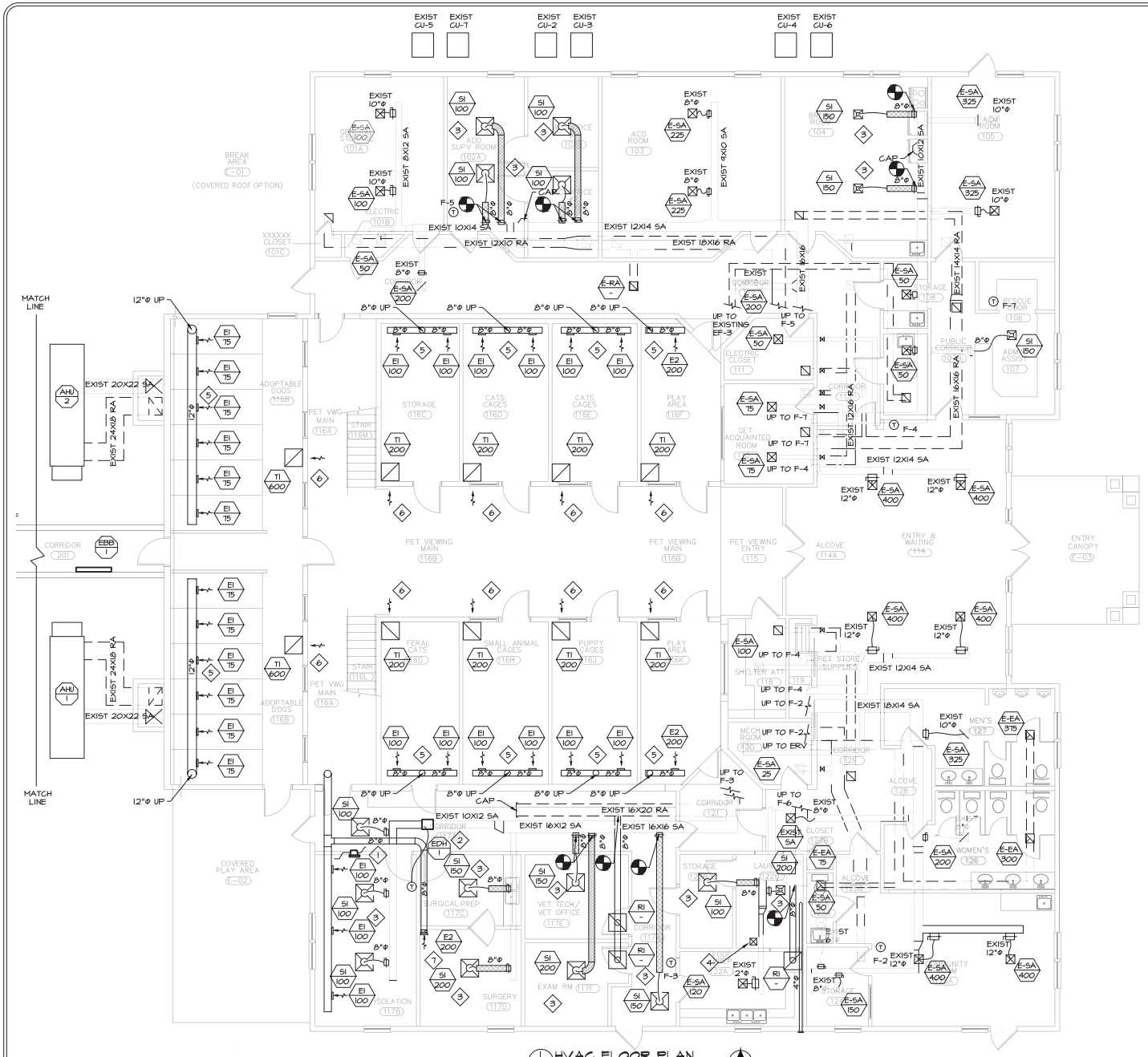


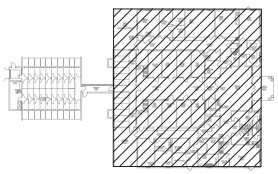
1 HVAC FLOOR PLAN
M1.0 SCALE: 3/16"=1'-0"

GENERAL NOTES

1. BUILDING IS EXISTING. COORDINATE WITH ARCHITECTURAL PRINTS AND GC FOR ALL DEMO OF EXISTING HVAC AIR DEVICES AND ASSOCIATED DUCT BACK TO MAIN. PREP AND CAP AT NEW TIE IN AS REQUIRED.
2. DRAWINGS ARE DIAGRAMMATIC IN NATURE. ALL WALL LOCATIONS SHALL BE REFERENCED FOR DIMENSIONS FROM ARCHITECTURAL PRINTS.
3. RE-BALANCE CFM OF EACH DIFFUSER TO CFM INDICATED DRAWINGS.

KEYED NOTES

1. PROVIDE A PRESSURE DIFFERENTIAL MAGNAHELIC -0.1 TO 0.1 PRESSURE RANGE TO CONFIRM ISOLATION ROOM REMAINS NEGATIVE.
2. PROVIDE A NEW ELECTRIC DUCT HEATER TO MAINTAIN TEMPERATURE IN ISOLATION ROOM. DUCT HEATER TO HAVE SCR CONTROLS.
3. REMOVE EXISTING DIFFUSER AND ADD NEW. REUSE EXISTING TAP IF APPLICABLE. BALANCE TO CFM INDICATED.
4. COORDINATE WITH GC FOR DEMO AND REMOVAL OF KITCHEN HOOD EQUIPMENT IN THIS AREA. COORDINATE DEMO OF DUCT UP THRU CEILING TO REMOVED EXISTING EF-1 UNIT ON ROOF.
5. ALL DUCT WORK IN WASH DOWN AREA TO BE STAINLESS STEEL.
6. COORDINATE TRANSFER AIR GRILLE PATH BETWEEN JOIST OF NEW OVERHANG. COORDINATE WITH GC FOR FINAL AND PROVIDE PERFORATED SOFFIT.
7. EXHAUST TO BE REMOVED 12" ABOVE FLOOR. PROVIDE A 12"W X 24" H GRILLE. BALANCE INSIDE TO CFM INDICATED. DROP INSIDE SURGERY TO BE STAINLESS STEEL & CLEANABLE.



KEY PLAN

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BACON COMMERCIAL DESIGN LLC
PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

Dynamic ENGINEERED SYSTEMS, INC.
(314) 631-1000 (800) 325-8362
www.DynamicEngineeredSystems.com

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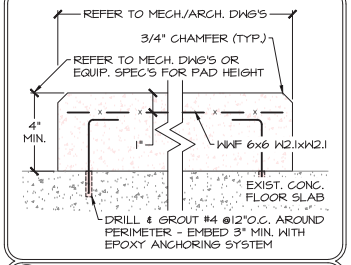
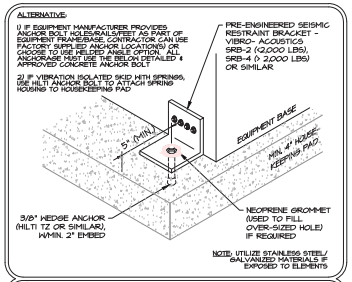
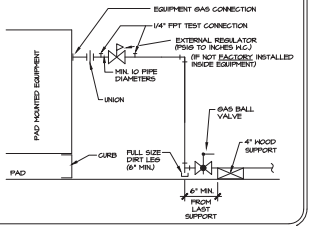


2 M1.1 EQUIPMENT PAD DETAIL
SCALE: NO SCALE



3 M1.1 PAD-MOUNTED ANCHOR
SCALE: NO SCALE
SB-300



4 M1.1 GAS CONNECTION DETAIL
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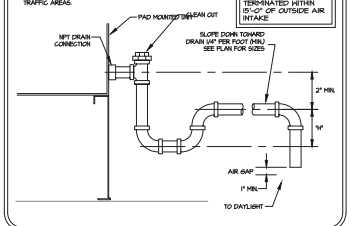
Detail NO.: P1002



5 M1.3 CONDENSATE DRAIN DETAIL
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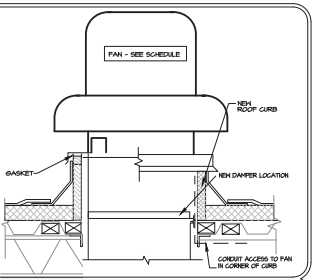

6 M1.1 ROOF EXHAUST FAN DETAIL
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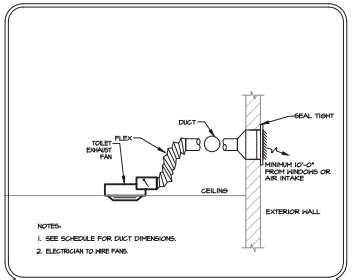
Detail NO.: EQ001A



7 M1.1 BATH ROOM FAN DETAIL
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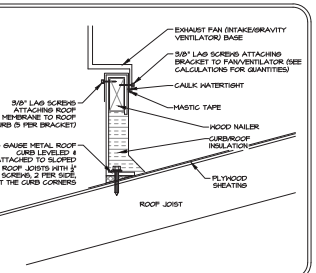
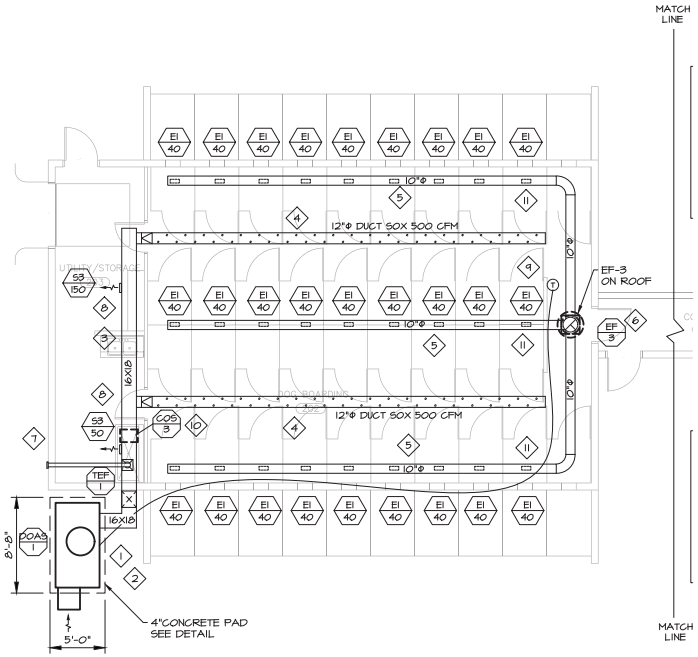


8 M1.1 1/2" LAG SCREW TO WD. JOIST
SCALE: NO SCALE



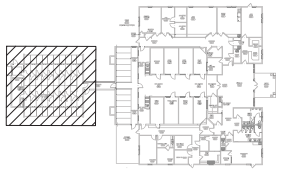
1 M1.1 HVAC NEW ADDITION FLOOR PLAN
SCALE: 3/16"=1'-0"

GENERAL NOTES

1. BUILDING IS A NEW ADDITON.. COORDINATE WITH ARCHITECTURAL PRINTS AND GC FOR ALL NEW WORK IN THIS AREA. COORDINATE WITH EXISTING UTILITIES FOR TIE-INS. COORDINATE ALL SHUT DOWN OF EXISTING BUILDING UTILITIES WITH GC PRIOR TO DISCONNECT.
2. DRAWINGS ARE DIAGRAMMATIC IN NATURE. ALL WALL LOCATIONS SHALL BE REFERENCED FOR DIMENSIONS FROM ARCHITECTURAL PRINTS.
3. NEW KENNEL AREAS TO BE INDEPENDENT SYSTEMS FROM EXISTING FACILITY.
4. PROVIDE ALTERNATE BID FOR THE INSTALL OF COSATRON 2000 SERIES OR EQUAL DUCT UNIT AIR PURIFIER.

KEYED NOTES

1. PROVIDE NEW PAD MOUNTED DOAS UNIT. COORDINATE WITH GC FOR FINAL LOCATION. EXTEND NEW DUCT UP AND INTO BUILDING. ALL EXTERIOR DUCT TO BE WRAPPED WITH R=8.0 AND UV JACKETED.
2. COORDINATE FINAL LOCATION OF NEW GAS PIPING FROM EXISTING BUILDING TO NEW DOAS UNIT. COORDINATE CONDENSATE DRAIN FROM UNIT TO EDGE OF CONCRETE PAD.
3. INSTALL NEW SUPPLY DUCT AND SECURED TO STRUCTURE. COORDINATE WITH GC FOR FINAL ROUTING.
4. INSTALL NEW 12"Φ DUCT SOX THRU KENNEL SPACE.
5. NEW 10"Φ SPIRAL EXHAUST DUCT. PROVIDE EXHAUST GRILLE WITH BALANCE DAMPER ON BOTTOM OFF DUCT AND BALANCE TO CFM INDICATED.
6. NEW ROOF MOUNTED EXHAUST FAN. PROVIDE ROOF CURB. COORDINATE WITH GC FOR FINAL LOCATION.
7. INSTALL NEW TOILET EXHAUST FAN AND VENT THRU WALL. COORDINATE WITH GC FOR FINAL LOCATION SEAL WEATHER TIGHT.
8. PROVIDE SIDE WALL DUCT MOUNT REGISTERS AND ADJUST TO CFM SHOWN.
9. COORDINATE FINAL LOCATION OF T-STAT WITH GC.
10. PROVIDE ALTERNATE BID FOR COSATRON DUCT MOUNTED AIR PURIFIER UNIT MODEL 2000 OR EQUAL.
11. ALL DUCT WORK IN KENNEL AREA TO BE STAINLESS STEEL.



KEY PLAN

SEAL:

MISSOURI CERTIFICATE OF AUTHORITY #: E-2011001315
PROFESSIONAL ENGINEER #: MO-25069

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PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

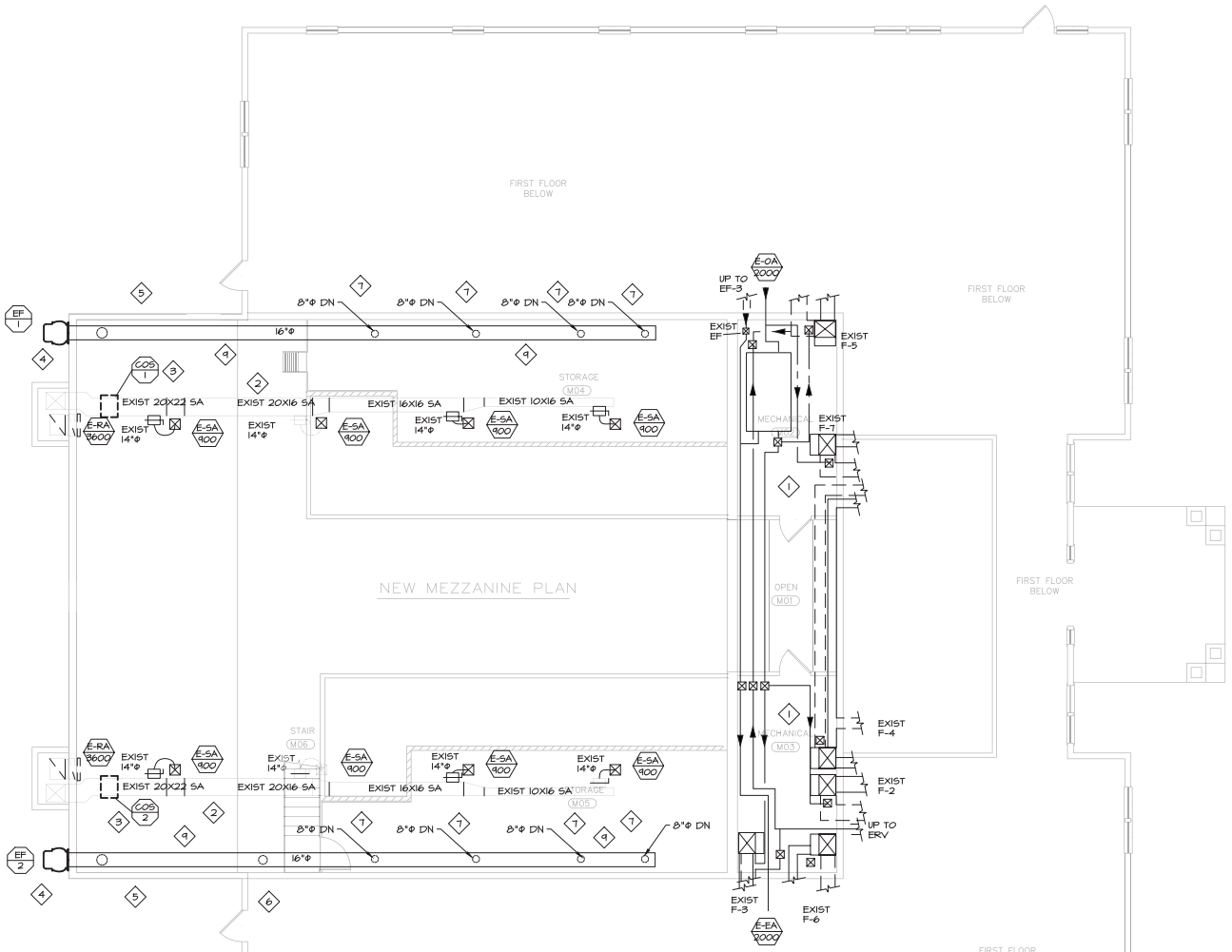
Dynamic ENGINEERED SYSTEMS, INC.
2777 CLAYTON ROAD, CONCORD, CA 94519
(925) 676-1901 (800) 838-2922 FAX 838-2933
www.DynamicEngineeredSystems.com

MEP MODIFICATIONS FOR:
JEFFERSON COUNTY MISSOURI
ANIMAL RESOURCE CENTER
4848 STATE ROUTE 30
HOUSE SPRINGS, MO

REVISIONS:

TAG	DESCRIPTION
0	FOR BIDDING & PERMIT REVIEW 04/15/20 FOR CONSTRUCTION WITH APPROVED PERMITS

PROJECT #:	BAC-19-243
DATE:	01/06/20
DRAWN BY:	BM
DESIGNED BY:	POB
CHECKED BY:	POB
SHEET:	M1.1



MEZZANINE & PARTIAL ROOF PLAN

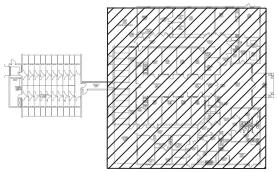
M1.2 SCALE: 3/16"=1'-0"

GENERAL NOTES

1. BUILDING IS EXISTING. COORDINATE WITH ARCHITECTURAL PRINTS AND GC FOR ALL DEMO OF EXISTING HVAC AIR DEVICES AND ASSOCIATED DUCT BACK TO MAIN. PREP AND CAP AT NEW TIE IN AS REQUIRED.
2. DRAWINGS ARE DIAGRAMMATIC IN NATURE. ALL WALL LOCATIONS SHALL BE REFERENCED FOR DIMENSIONS FROM ARCHITECTURAL PRINTS.
3. RE-BALANCE CFM OF EACH DIFFUSER TO CFM INDICATED DRAWINGS.

KEYED NOTES

1. EXISTING GAS FIRED FURNACES, ERV, AND MECHANICAL DUCT, PIPING, AND EQUIPMENT IN THIS AREA TO BE REUSED. CLEAN, INSPECT, AND VERIFY UNITS ARE IN GOOD WORKING ORDER. NOTIFY OWNER/GC OF ANY DEFECTS FOUND.
2. EXISTING DUCT FROM EXISTING GROUND MOUNTED AIR HANDLING UNITS.
3. PROVIDE ALTERNATE BID FOR COSATRON DUCT MOUNTED AIR PURIFIER UNIT MODEL 2000 OR EQUAL.
4. PROVIDE NEW WALL MOUNTED EXHAUST FANS. COORDINATE WITH GC FOR OPENING IN EXISTING WALL. ANCHOR FAN TO WALL AND PROVIDE 2X2X4 ANGLE SUPPORT. SEAL WEATHER TIGHT.
5. 12"Φ DROP TO CAGE EXHAUST DUCT SEE SHEET M1.0 FOR DUCT ROUTING.
6. 10"Φ DROP TO SURGERY AREA EXHAUST DUCT SEE SHEET M1.0 FOR DUCT ROUTING.
7. 8"Φ DROP TO CAGE EXHAUST DUCT SEE SHEET M1.0 FOR DUCT ROUTING.
8. EXISTING MAU AND EF-1 TO BE REMOVED DURING DEMO PHASE COORDINATE WITH GC FOR CURB CAP AND SEAL.
9. ALL KENNEL EXHAUST DUCT WORK TO BE STAINLESS STEEL.



KEY PLAN

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MISSOURI CERTIFICATE OF AUTHORITY #: E-2011001315
PROFESSIONAL ENGINEER #: MO-2006B

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PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

Dynamic ENGINEERED SYSTEMS, INC.
(314) 644-3500 (800) 325-3500
(FAX) 644-3500 (800) 644-3502
www.DynamicEngineeredSystems.com

MEP MODIFICATIONS FOR:

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4848 STATE ROUTE 30
HOUSE SPRINGS, MO

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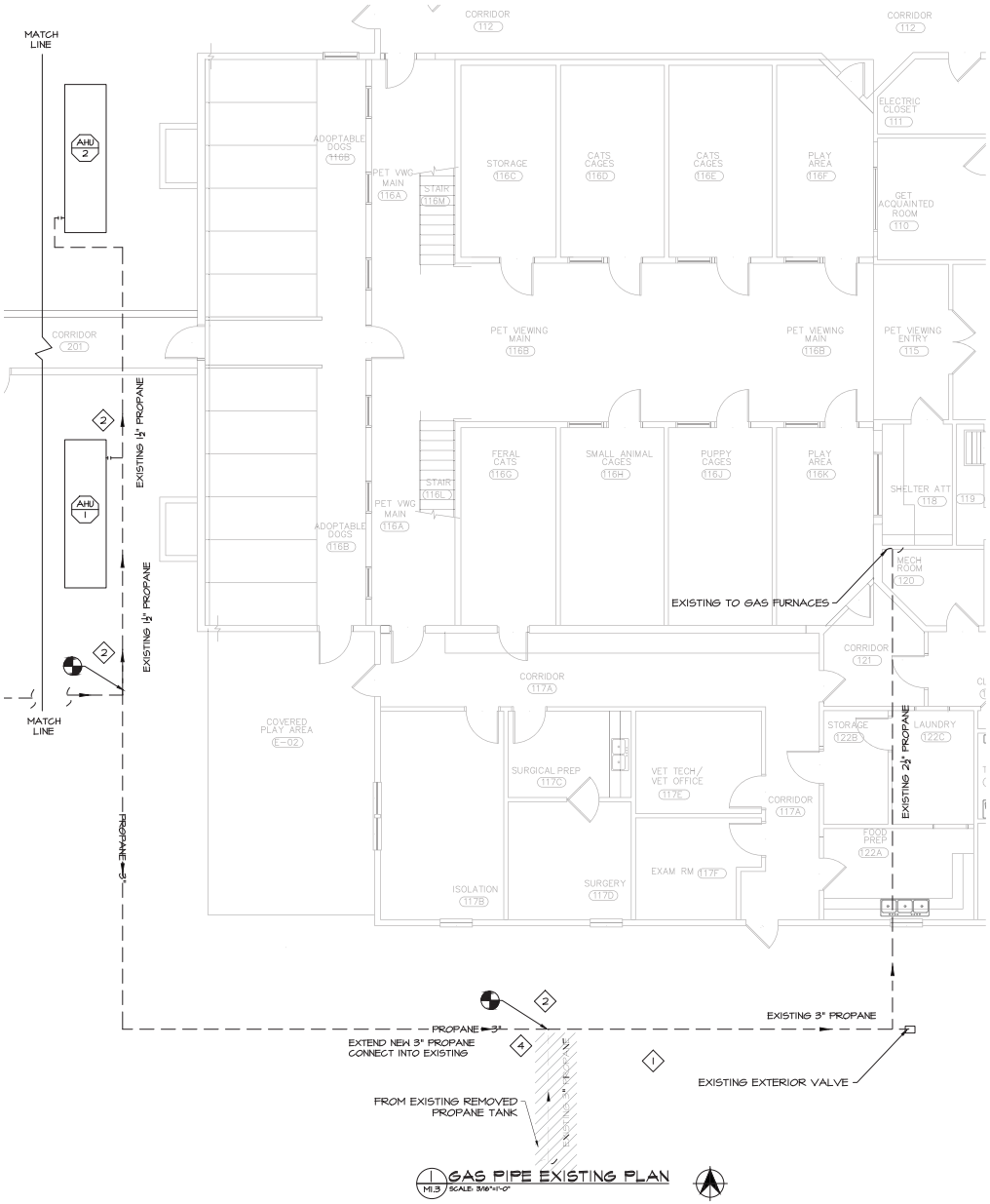
PROJECT #:	BAC-19-243
DATE:	01/06/20
DRAWN BY:	BM
DESIGNED BY:	POB
CHECKED BY:	POB
SHEET:	M1.2

GENERAL NOTES

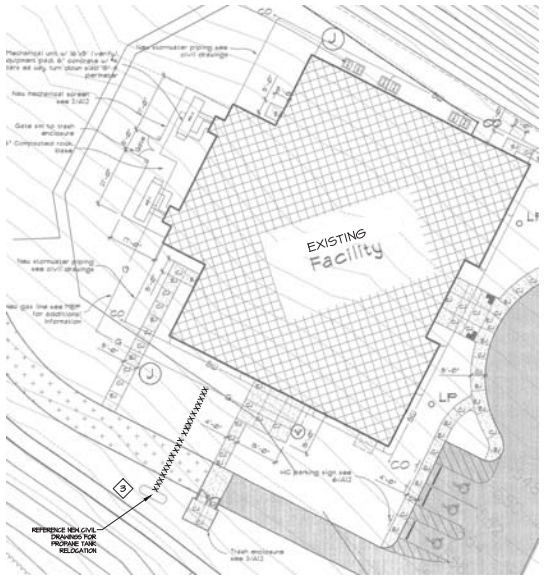
1. BUILDING IS EXISTING. COORDINATE WITH ARCHITECTURAL PRINTS AND GC FOR ALL DEMO OF EXISTING PLUMBING SYSTEMS AND FIXTURES AS REQUIRED.
2. DRAWINGS ARE DIAGRAMMATIC IN NATURE. ALL WALL LOCATIONS SHALL BE REFERENCED FOR DIMENSIONS FROM ARCHITECTURAL PRINTS.
3. COORDINATE CONCRETE DEMO AND POUR BACK FOR TIE-INS BELOW SLAB WITH GC.

KEYED NOTES

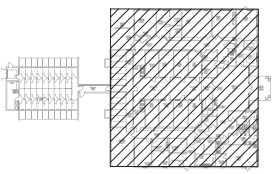
1. EXISTING GAS PIPE TO REMAIN AND BE REUSED.
2. COORDINATE WITH GC FOR NEW CONNECTION AT EXISTING GAS PIPING BELOW GRADE. COORDINATE WITH GC FOR TIE IN.
3. COORDINATE WITH GC FOR NEW LOCATION OF PROPANE TANKS.
4. CAP AND DEMO EXISTING PROPANE LINE.



1 M1.3 GAS PIPE EXISTING PLAN
SCALE: 3/16"=1'-0"



2 M1.3 GAS PIPE SITE EXISTING PLAN
SCALE: NTS



KEY PLAN

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PROFESSIONAL ENGINEER #: MO-25069

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PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

Dynamic ENGINEERED SYSTEMS, INC.
1000 Corporate Woods Parkway, Suite 100
O'Fallon, Missouri 63368
www.DynamicEngineeredSystems.com

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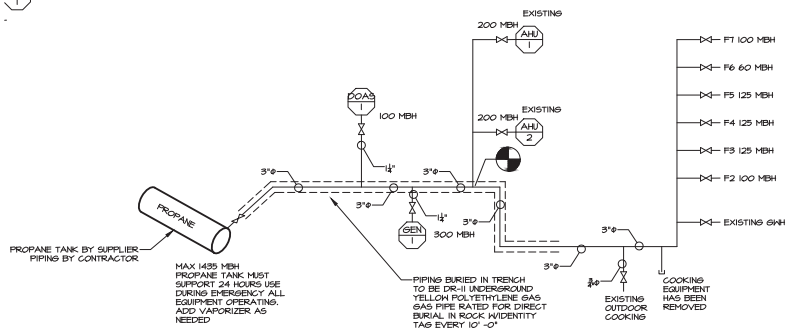
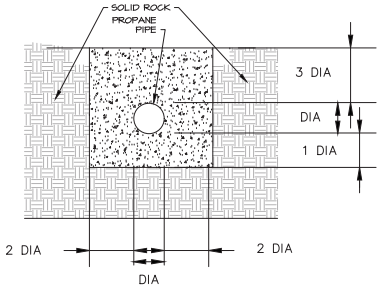
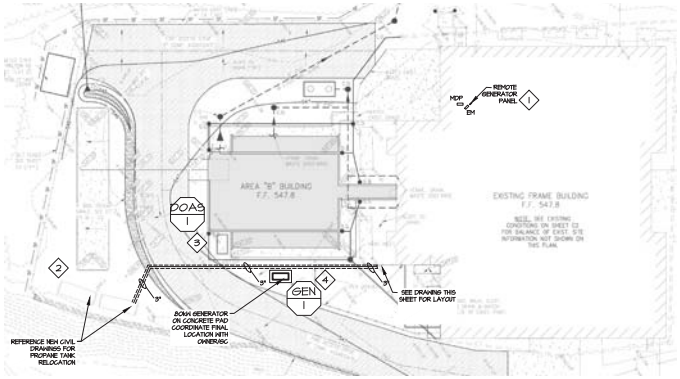
SHEET:	M1.3



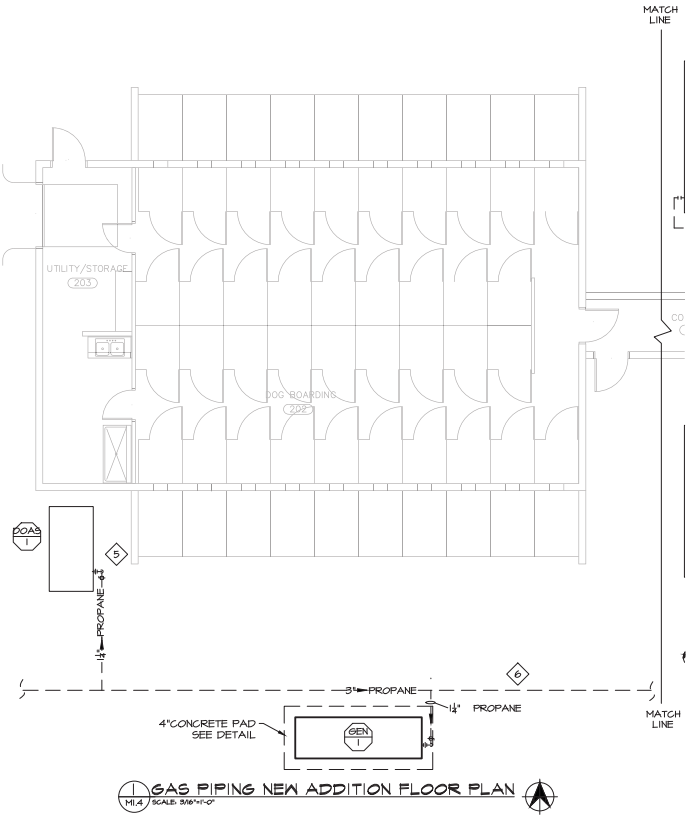
2 PROPANE FLOW DIAGRAM
M1.4 SCALE: NONE



3 TRENCH DETAIL
M1.4 SCALE: NO SCALE



4 PARTIAL SITE GAS PIPING PLAN
M1.4 SCALE: NONE



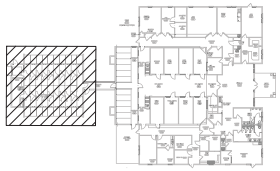
1 GAS PIPING NEW ADDITION FLOOR PLAN
M1.4 SCALE: 3/16"=1'-0"

GENERAL NOTES

1. BUILDING IS A NEW ADDITION. COORDINATE WITH ARCHITECTURAL PRINTS AND GC FOR NEW AND EXISTING CONNECTION POINTS.
2. DRAWINGS ARE DIAGRAMMATIC IN NATURE. ALL WALL LOCATIONS SHALL BE REFERENCED FOR DIMENSIONS FROM ARCHITECTURAL PRINTS.
3. COORDINATE CONCRETE DEMO AND POUR BACK FOR TIE-INS BELOW SLAB WITH GC.

KEYED NOTES

1. EXISTING MDP, NEW MANUAL TRANSFER SWITCH, NEW EM PANEL AND REMOTE GENERATOR STATUS PANEL LOCATION. SEE DWG. E1.0 FOR EXACT LOCATION
2. EXISTING PROPANE SYSTEM TO BE REUSED. ROUTE A SEPARATE PROPANE LINE DEDICATED TO THE GENERATOR. SEE MECHANICAL.
3. NEW EMERGENCY GENERATOR SET ON NEW CONCRETE PAD. COORDINATE FINAL LOCATION WITH GC , OWNER, AND CIVIL. SEE ONE LINE DIAGRAM ROUTE CONDUIT AND PROPANE LINE IN NEW TRENCH.
4. CONNECT NEW PROPANE INTO EXISTING PIPE. SEE PROPANE FLOW DIAGRAM.
5. CONNECT NEW PROPANE TO NEW EQUIPMENT. VERIFY ORIFICE SIZE FOR PROPANE WITH MANUFACTURER RECOMMENDATIONS.
6. EXTEND NEW GAS PIPING IN NEW TRENCH. COORDINATE TIE IN TO EXISTING PIPING VERIFY WITH FEILD CONDITIONS AND LOCATION.



KEY PLAN

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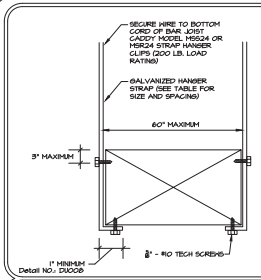
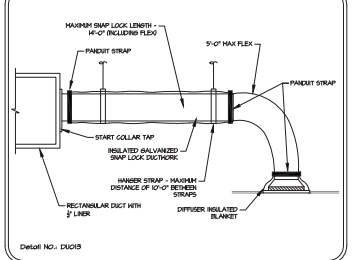
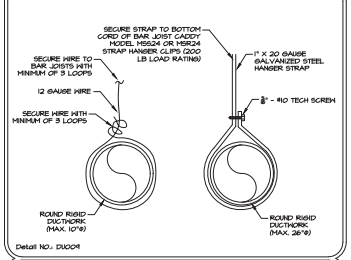


RECTANGULAR DUCT HANGER TABLE		
MAXIMUM HALF OF DUCT PERIMETER	PAIR @ 10 FT SPACING	PAIR @ 5 FT SPACING
P/2 = 30"	1" X 22 GA.	1" X 22 GA.
P/2 = 72"	1" X 18 GA.	1" X 22 GA.
P/2 = 96"	1" X 16 GA.	1" X 20 GA.
P/2 = 120"	1" X 16 GA.	1" X 18 GA.
P/2 = 168"	1" X 16 GA.	1" X 16 GA.
P/2 = 192"	NOT GIVEN	1" X 16 GA.

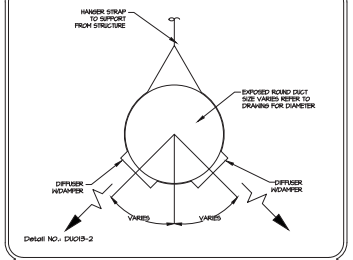
1 M1.3 RECTANGULAR DUCT HANGER DETAIL
SCALE: NO SCALE



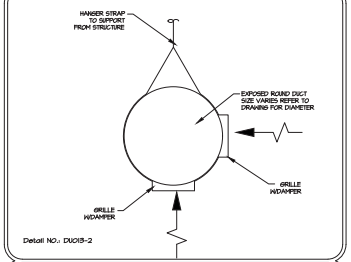
2 M1.3 SLEEVED DUCT DETAIL
SCALE: NO SCALE



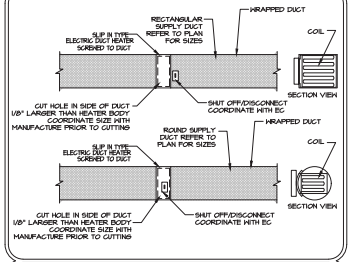
3 M1.3 ROUND DUCT HANGER DETAIL
SCALE: NO SCALE



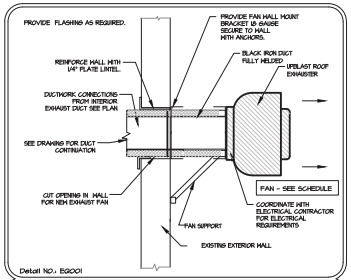
4 M1.3 ROUND DUCT DIFFUSER DETAIL
SCALE: NO SCALE



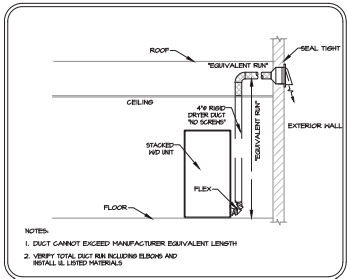
5 M1.3 ROUND DUCT EXHAUST DETAIL
SCALE: NO SCALE



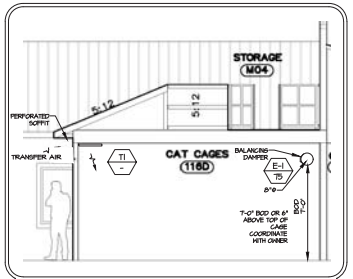
6 M1.5 DUCT HEATER
SCALE: NO SCALE
Detail NO.: EQCIO



7 FBI.2 WALL EXHAUST FAN DETAIL
SCALE: NO SCALE



8 M1.5 DRYER VENT DETAIL
SCALE: NO SCALE
Detail NO.: EQCI2A



9 M1.5 TYPICAL KENNEL ELEVATION
SCALE: NO SCALE

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636.933.0007

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(TOLL FREE) 800-878-8987
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CHECKED BY:	POB
SHEET:	M1.5

NEW EQUIPMENT SCHEDULES

DOAS UNIT SCHEDULE

PLAN MARK	MANUFACTURER AND MODEL NO.	SUPPLY FAN SECTION					COOLING PERFORMANCE							HEATING PERFORMANCE				ELECTRICAL DATA				REMARKS
		SA CFM	OA CFM	MAX ESP IN W.G.	MOTOR HP	MOTOR VOLTS/PH	TOTAL COOLING MBH	SENS. COOLING MBH	EAT DB °F	EAT WB °F	LAT DB °F	LAT WB °F	REF. TYPE	NATURAL GAS HEAT INPUT MBH	NATURAL GAS HEAT OUTPUT MBH	NATURAL GAS HEAT LAT °F	NATURAL GAS HEAT AFUE	VOLTS/PH	MCA	MOP		
DOAS-1	AAON RQ-006-B-EA09	1000	1000	0.5	1	208/3	71.9	39.5	95	78	57.3	56.5	410A	100	81	74.9		208/3	33	50		1,2,3,4,5,6,7

REMARKS:
1. TRANE, CARRIER, YORK ETC. APPROVED EQUAL
2. VSD FOR BALANCING AIR
3. OUTSIDE AIR DAMPER, MERV 8 FILTER
4. DIGITAL SCROLL
5. PROPANE HEATING, MODULATING
6. CURB 12" FOR SNOW BUILD UP
7. THERMOSTAT, COMMUNICATING
8. -

EXHAUST FAN SCHEDULE

PLAN MARK	MANUFACTURER & MODEL NUMBER	SA CFM	SP "	RPM	DRIVE	HP (WATTS)	ELEC. VOLTS/PH	WEIGHT	REMARKS
EF-1	COOK ACWD 120	1250	0.25	1307	DIRECT	156	120/1	62	GBD,DS,COAT
EF-2	COOK ACWD 120	1250	0.25	1307	DIRECT	156	120/1	62	GBD,DS,COAT
EF-3	COOK ACED 120	1200	0.25	1307	DIRECT	156	120/1	62	GBD,DS,COAT
TEF-1	COOK ACWD 90	300	0.25	1305	DIRECT	62	120/1	28	GBD,DS,COAT

REMARKS:
GBD - GRAVITY BACKDRAFT DAMPER
PRC - PREFABRICATED ROOF CURB
AD - ADJUSTABLE DRIVE
DS - DISCONNECT SWITCH
BS - BIRD SCREEN
EX - EXPLOSION PROOF MOTOR
MD - MOTORIZED DAMPER
WC - WALL CAP
FG - FRONT GUARD
BG - BACK GUARD
WS - WALL SLEEVE
ISO - ISOLATORS
COAT - PHENOLIC AIR DRY COATING

DUCT HEATER (ELECTRIC) SCHEDULE

PLAN MARK	MANUFACTURER	MODEL NO.	CFM	DUCT SIZE	KW	STEPS	VOLTS/PH	REMARKS
EDH-1	BRASCH		300	10X12	4			1,2,3

REMARKS:
1. THERMOSTAT
2. AIRFLOW SWITCH
3. SCR CONTROLS
4. -

ELEC. BASEBOARD HEATER SCHEDULE

PLAN MARK	MANUFACTURER & MODEL NO.	HEATING CAPACITY (kW)	VOLT/PH	REMARKS
EBB-1	Q-MARK	2	240/1	1,2

REMARKS:
1. FURNISH WITH INTEGRAL THERMOSTAT & FACTORY DISCONNECT SWITCH
2. SURFACE MOUNT CABINET WITH BASE RAIL
3. -
4. -

ALTERNATE BID COSATRON UNIT SCHEDU

PLAN MARK	MANUFACTURER & MODEL NO.	CFM	W"X H"	VOLT/PH
COS-1	COSATRON 200 SERIES	3600	20X22	120/1
COS-2	COSATRON 200 SERIES	3600	20X22	120/1
COS-3	COSATRON 200 SERIES	1000	16X18	120/1

REMARKS:
1. -
2. -
3. -
4. -

AIR BALANCE SCHEDULE

PLAN MARK	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	SUPPLY AIR (CFM)	EXHAUST AIR (CFM)	PRESSURE	PERCENT (%) OUTSIDE AIR
EXIST AHU-1	1100	2500	3600	N/A	1100	0.35
EXIST AHU-2	1100	2500	3600	N/A	1100	0.35
F-2 THRU 7						
ERV	1800			800		0.44
EXIST EF-2				86	-86	
EXIST EF-3				199	-199	
EF-1				1200	-1200	
EF-2				1700	-1700	
HVAC SYSTEMS SHALL BE TESTED TO OPERATE AND BALANCE AS ACCORDING TO THESE SCHEDULES IN ACCORDANCE WITH THE SPECIFICATIONS.				TOTAL	-185	1.14

AIR BALANCE SCHEDULE

PLAN MARK	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	SUPPLY AIR (CFM)	EXHAUST AIR (CFM)	PRESSURE	PERCENT (%) OUTSIDE AIR
DOAS-1	1000		1000		1000	
EF-3				1200	-1200	
HVAC SYSTEMS SHALL BE TESTED TO OPERATE AND BALANCE AS ACCORDING TO THESE SCHEDULES IN ACCORDANCE WITH THE SPECIFICATIONS.				TOTAL	-200	0

AIR DEVICE SCHEDULE

PLAN MARK	MANUFACTURER	MODEL	MODULE SIZE	NECK SIZE	MATERIAL	ACCESSORIES	FINISH	REMARKS
S1	TITUS OR EQUAL	TMS	24"X 24"	SEE DWG	STL	VC	STD	1
S2	TITUS OR EQUAL		24"X 24"	SEE DWG	STL	VC		1
R1	TITUS OR EQUAL	PAR	24"X 24"	SEE DWG	STL	N/A		1
T1	TITUS OR EQUAL	PAR	24"X 24"	SEE DWG	SS	N/A		1
E1	TITUS OR EQUAL	SSFL	6" X 12"	SEE DWG	SS	VC		1
E2	TITUS OR EQUAL	SSFL	24"X 12"	SEE DWG	SS	VC		1
E3	TITUS OR EQUAL	SSFL	6"X 24"	SEE DWG	SS	VC		1

REMARKS:
1.COORDINATE FINAL DIFFUSER TYPE WITH EXISTING

MATERIAL
STL - STEEL
ALU - ALUMINUM
PL - PLASTIC
SS - STAINLESS

ACCESSORIES
PC - PATTERN CONTROL
VC - VOLUME CONTROL
RC - REMOVABLE CORE
BS - BIRD SCREEN
ACT - ACTUATOR
SQR - SQUARE TO ROUND ADAPTER

FINISH
STD - STANDARD
PC - PRIME COAT
BWE - BAKED WHITE
SP - SPECIAL

DIFFUSER & GRILLE SCHEDULE (EXISTING FOR REFERENCE ONLY)

TAG	DESCRIPTION	MANUFACTURER	MODEL	SIZE	NECK DIA. (IN.)	FRAME/BORDER	THROW PATTERN	CEILING TYPE	FINISH	COMMENTS
A1	SUPPLY AIR DIFFUSER	PRICE	SMD-FR	6"x6"	6	TYPE 1	4-WAY	GYP.	WHITE	PROVIDE WITH OPTIONAL VOLUME CONTROL
A2	SUPPLY AIR DIFFUSER	PRICE	SMD-FR	6"x6"	6 SQ.	TYPE 1	4-WAY	GYP.	WHITE	PROVIDE WITH OPPOSED BLADE DAMPER
B1	SUPPLY AIR DIFFUSER	PRICE	SMD-FR	8"x8"	8	TYPE 1	4-WAY	GYP.	WHITE	PROVIDE WITH OPTIONAL VOLUME CONTROL
C1	SUPPLY AIR DIFFUSER	PRICE	SMD-FR	12"x12"	10	TYPE 1	4-WAY	GYP.	WHITE	PROVIDE WITH OPTIONAL VOLUME CONTROL
C2	SUPPLY AIR DIFFUSER	PRICE	SMD-FR	12"x12"	12	TYPE 1	4-WAY	GYP.	WHITE	PROVIDE WITH OPTIONAL VOLUME CONTROL
D1	SUPPLY AIR DIFFUSER	PRICE	SMD-FR	15"x15"	12	TYPE 1	4-WAY	GYP.	WHITE	PROVIDE WITH OPTIONAL VOLUME CONTROL
E1	SUPPLY AIR DIFFUSER	PRICE	SMD	18"x18"	14	TYPE 1	4-WAY	GYP.	WHITE	PROVIDE WITH OPPOSED BLADE DAMPER
F1	SUPPLY AIR DIFFUSER	PRICE	SMD-FR	9"x9"	8	TYPE 1	2-WAY (OPPOSITE)	GYP.	WHITE	TYPICAL HALLWAY DIFFUSER. PROVIDE WITH OPTIONAL VOLUME CONTROL
G1	SUPPLY/RETURN AIR GRILLE	PRICE	5200	8"x8"	X	F/A/D	ADJUSTABLE	SIDEWALL	WHITE	PROVIDE UNIT WITH INTEGRAL VOLUME DAMPER
R	RETURN/EXHAUST AIR GRILLE	PRICE	PDDR-FR	20"x20"	10	TYPE 1	X	GYP.	WHITE	GRILLE SHALL BE PERFORATED.
R1	RETURN/EXHAUST AIR GRILLE	PRICE	PDDR-FR	12"x12"	8 SQ.	TYPE 1	X	GYP.	WHITE	GRILLE SHALL BE PERFORATED.
S	RETURN/EXHAUST AIR GRILLE	PRICE	PDDR-FR	24"x24"	14	TYPE 1	X	GYP.	WHITE	GRILLE SHALL BE PERFORATED.
T	RETURN AIR GRILLE	PRICE	PDR	24"x48"	22"x46"	TYPE 1	X	GYP.	WHITE	GRILLE SHALL BE PERFORATED.
W	DUAL COMBINATION INTAKE LOUVER	RUSKIN	ELJDD12	24"x24"	X	X	X	TO BE DETERMINED		COORDINATE FINISH WITH ARCHITECT. SEE ARCHITECTURAL PLANS FOR FINAL LOCATION.
X	DUAL COMBINATION EXHAUST LOUVER	RUSKIN	ELJDD13	24"x24"	X	X	X	TO BE DETERMINED		COORDINATE FINISH WITH ARCHITECT. SEE ARCHITECTURAL PLANS FOR FINAL LOCATION.

AIR HANDLING UNIT (AHU) SCHEDULE (EXISTING FOR REFERENCE ONLY)

TAG	GENERAL INFORMATION				OUTSIDE AIR DATA				RETURN AIR DATA				MIXED AIR TEMPERATURE DATA		COOLING DATA				LIQUID SUBCOOLING	GAS HEAT DATA			HOT GAS REHEAT DATA			CONDENSING SECTION DATA			ELECTRICAL DATA			
	MODEL NUMBER	SUPPLY AIR CFM	ESP SUP./RET. WC	NOTES	OUTSIDE AIR CFM	SUMMER DB/WB	WINTER DB/WB		SUMMER DB/WB	WINTER DB/WB	MAX. ECON. CFM		SUMMER MAT DB/WB	WINTER MAT DB	TOTAL CAP. MBH	SENS. CAP. MBH	LAT DB/WB		TEMP. RISE DB	TOTAL CAP. MBH	MAX. TEMP. RISE DB	MAX. LAT DB	TOTAL CAP. MBH	DEHUMID. LAT DB	MAX. TEMP. RISE DB	AMBIENT DB	MIN. AMBIENT DB		VOLTAGE	PHASE	MCA	MOCP
AHU-1	ADDISON: DCD96	3600	0.50/0.35	1, 2, 3, 4, 5, 6, 7, 8	1100	92 / 77	6.0 / 5.0		75 / 63	72 / 54	3600		80.2 / 67.3	51.8	139.7	99.8	55.1 / 54.7		6.2	200 / 41	41.0	92.8	13.4	74.7		95.0	40.0		208	3	64.2	80
AHU-2	ADDISON: DCD96	3600	0.50/0.35	1, 2, 3, 4, 5, 6, 7, 8	1100	92 / 77	6.0 / 5.0		75 / 63	72 / 54	3600		80.2 / 67.3	51.8	139.7	99.8	55.1 / 54.7		6.2	200 / 41	41.0	92.8	13.4	74.7		95.0	40.0		208	3	64.2	80

NOTES:
1. PROVIDE WITH ECONOMIZER AND UNIT MOUNTED DISCONNECT.
2. RTU SHALL HAVE SMOKE DETECTOR(S) IN THE AIR STREAM. SEE GENERAL MECHANICAL NOTE #14.
3. HACR BREAKER SHALL BE USED PER THE NATIONAL ELECTRICAL CODE.
4. STATIC PRESSURES ARE APPROXIMATE AND BASED ON THIS DESIGN. ANY MODIFICATIONS IN DUCTWORK SIZE, ROUTING OR FITTINGS WILL RESULT IN CHANGES TO THE FINAL STATIC PRESSURE. CONTRACTOR SHALL VERIFY/CALCULATE FINAL STATIC PRESSURES AND ASSURE PROPER FAN SELECTIONS/SETTINGS ARE MET IN ORDER TO PROVIDE THE NECESSARY FLOWRATES. IF STATIC PRESSURES ARE INCREASED ABOVE THE CAPABILITY OF THE STANDARD MOTOR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING A "HIGH-STATIC" MOTOR CAPABLE OF MEETING THE REQUIREMENTS.
5. UNIT SHALL BE PROVIDED WITH DEHUMIDIFICATION CAPABILITIES.
6. GAS HEAT SHALL BE L.P. PROVIDE BURNER AND/OR CONVERSION KIT AS NECESSARY.
7. PROVIDE WITH ALL SENSORS AND CONTROLS TO ACCOMMODATE ASHRAE CYCLE II CONTROL SEQUENCE.
8. PROVIDE WITH LOOSE WALL STAT AND HUMIDITY SENSOR FROM THE MANUFACTURER.

ENERGY RECOVERY VENTILATOR (ERV) SCHEDULE (EXISTING FOR REFERENCE ONLY)

TAG	GENERAL INFORMATION			AIRFLOW DATA				ENERGY RECOVERY WHEEL PERFORMANCE DATA				ELECTRICAL DATA			
	MODEL NUMBER	OPERATING WT. [LB]	NOTES:	FRESH AIR CFM	EXHAUST AIR CFM	FRESH AIR ESP WC	EXHAUST AIR ESP WC	SUMMER DESIGN DB/WB	ERV SUPPLY DB/WB	WINTER DESIGN DB	ERV SUPPLY DB/WB	VOLTAGE	PHASE	MCA	MOCP
ERV-1	VENMAR: ERV2000	850	1, 2, 3	1800	1800	1.0	1.0	95.0 / 78.0	81.4 / 67.8	0.0 / -1.0	49.8 / 40.8	208	3	12.9	20

NOTES:
1. USE MAXIMUM TIME DELAY (CLASS 5) FUSES OR HACR TYPE CIRCUIT BREAKERS.
2. PROVIDE WITH UNIT MOUNTED DISCONNECT.
3. STATIC PRESSURES ARE APPROXIMATE AND BASED ON THIS DESIGN. ANY MODIFICATIONS IN DUCTWORK SIZE, ROUTING OR FITTINGS WILL RESULT IN CHANGES TO THE FINAL STATIC PRESSURE. CONTRACTOR SHALL VERIFY/CALCULATE FINAL STATIC PRESSURES AND ASSURE PROPER FAN SELECTIONS/SETTINGS ARE MET IN ORDER TO PROVIDE THE NECESSARY FLOWRATES. IF STATIC PRESSURES ARE INCREASED ABOVE THE CAPABILITY OF THE STANDARD MOTOR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING A "HIGH-STATIC" MOTOR CAPABLE OF MEETING THE REQUIREMENTS.

CONDENSING UNIT SCHEDULE (EXISTING FOR REFERENCE ONLY)

TAG	GENERAL INFORMATION					ELECTRICAL DATA			
	MODEL NUMBER	NOM. CAPACITY [TON]	REFRIGERANT	EQUIP. SERVED	WEIGHT [LB]	VOLTAGE	PHASE	MCA	FUSE/BRKR*
CU-3	ICP: CAC048HA	4.0	R-22	F-2	225	208	3	17.9	30
CU-3	ICP: CAC060HA	5.0	R-22	F-3	225	208	3	25.1	40
CU-4	ICP: CAC060HA	5.0	R-22	F-4	225	208	3	25.1	40
CU-5	ICP: CAC060HA	5.0	R-22	F-5	225	208	3	25.1	40
CU-6	ICP: CAC036HA	3.0	R-22	F-6	150	208	3	14.1	20
CU-7	ICP: CAC042HA	3.5	R-22	F-7	200	208	3	15.9	25

* MAXIMUM TIME DELAY (CLASS 5) FUSE OR HACR TYPE CIRCUIT BREAKER.

EXHAUST FAN SCHEDULE (EXISTING FOR REFERENCE ONLY)

TAG	GENERAL INFORMATION						ELECTRICAL DATA			
	MODEL NUMBER	FLOW [CFM]	STATIC PR. [WC]	RPM	ROOF OPENING	WEIGHT [LB]	NOTES:	VOLT	PHASE	HP	FLA
RELIEF	COOK: 120WB	1111	0.25	1165	24.5" x 24.5"	65	1, 2, 3, 4	120	1	1/4	2.08
EXHAUST	BROAN: SP100	86	0.64			18	1, 4, 5, 6, 7	120	1	X	0.5
EXHAUST	BROAN: SP200	199	0.31			17	1, 4, 5, 6, 7	120	1	X	1.3

NOTES:
1. DISCONNECT SWITCH
2. ROOF CURB
3. HINGED SUB BASE
4. STATIC PRESSURES ARE APPROXIMATE AND DEPENDENT ON FINAL INSTALLATION.
5. BACKDRAFT DAMPER
6. CONTRACTOR MAY NEED TO ADJUST VOLUME DAMPER TO MAINTAIN STATIC PRESSURES.
7. TRANSITION DUCTWORK AS NECESSARY TO ACCOMMODATE EXHAUST FAN CONNECTIONS.

FURNACE SCHEDULE (EXISTING FOR REFERENCE ONLY)

TAG	GENERAL INFORMATION			HEATING DATA			AIRFLOW DATA			ELECTRICAL DATA			
	MODEL NUMBER	WEIGHT [LB]	NOTES:	INPUT [MBH]	OUTPUT [MBH]	GAS CONN. [IN]	AIRFLOW	FRESH AIR	ESP [IN.]	VOLTAGE	PHASE	AMPS	FUSE/BRKR
F-2	TEMPSTAR: NTGM100DHA	225	1, 2, 3, 4, 5	100	90	1/2	1675	436	0.5	120	1	9.2	15
F-3	TEMPSTAR: NTGM125KHA	250	1, 2, 3, 4, 5	125	113	1/2	1810	608	0.6	120	1	12.0	20
F-4	TEMPSTAR: NTGM125KHA	250	1, 2, 3, 4, 5	125	113	1/2	1850	320	0.5	120	1	12.0	20
F-5	TEMPSTAR: NTGM125KHA	250	1, 2, 3, 4, 5	125	113	1/2	1850	459	0.5	120	1	12.0	20
F-6	TEMPSTAR: NTGM060FA	175	1, 2, 3, 4, 5	60	45	1/2	1200	86	0.4	120	1	5.3	15
F-7	TEMPSTAR: NTGM100DHA	200	1, 2, 3, 4, 5	100	90	1/2	1475	199	0.6	120	1	9.2	15

NOTES:
1. SUPPLY WITH CONCENTRIC VENT KIT.
2. MAXIMUM TIME DELAY (CLASS 5) FUSE OR HACR TYPE CIRCUIT BREAKER SHALL BE USED.
3. ALL STATIC PRESSURES ARE APPROXIMATE, DO NOT INCLUDE FILTER, AND ARE BASED ON THIS DESIGN. ANY MODIFICATIONS IN DUCTWORK SIZE, ROUTING OR FITTINGS WILL RESULT IN CHANGES TO THE FINAL STATIC PRESSURE(S). THE CONTRACTOR SHALL VERIFY FINAL STATIC PRESSURES AND ASSURE PROPER FAN SELECTIONS/SETTINGS ARE MET IN ORDER TO PROVIDE THE NECESSARY FLOWRATES. IF STATIC PRESSURES AND FLOWRATES CANNOT BE SATISFIED WITH THE SPECIFIED FURNACE MOTOR, THE CONTRACTOR SHALL PROVIDE AND INSTALL A MOTOR THAT CAN MEET THE REQUIREMENTS.
4. MINIMUM AFUE EFFICIENCY SHALL BE 91%.
5. GAS HEAT SHALL BE L.P. PROVIDE BURNER AND/OR CONVERSION KIT AS NECESSARY.

SEAL:

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PROFESSIONAL ENGINEER #: MO-25069

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BACON COMMERCIAL DESIGN LLC
PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

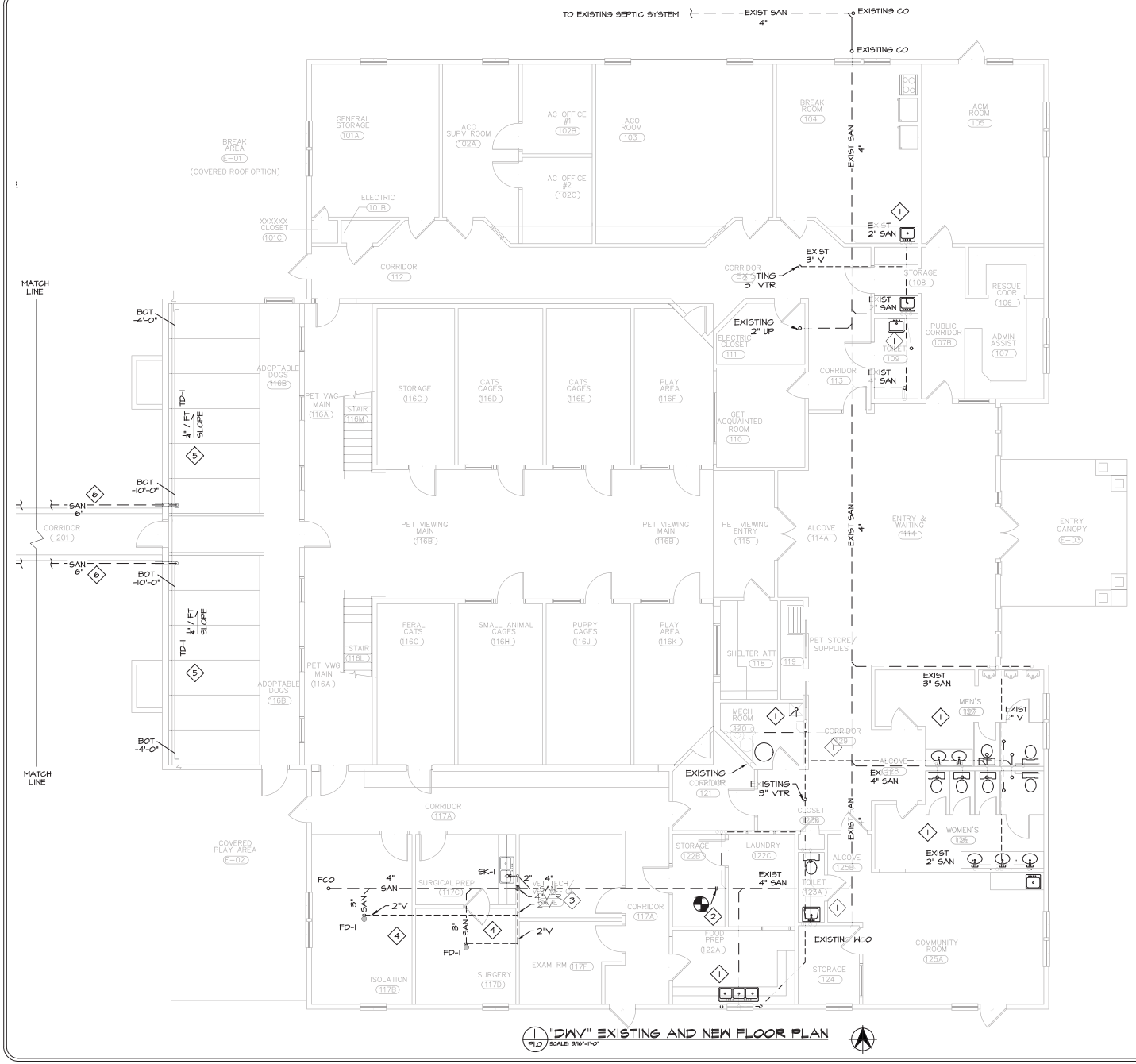
Dynamic ENGINEERED SYSTEMS, INC.
(314) 638-3600
FAX 638-3600
O'FALLON, MO 63366-2022
www.DynamicEngineeredSystems.com

MEP MODIFICATIONS FOR:
JEFFERSON COUNTY MISSOURI
ANIMAL RESOURCE CENTER
4848 STATE ROUTE 30
HOUSE SPRINGS, MO

REVISIONS:

TAG	DESCRIPTION
0	FOR BIDDING & PERMIT REVIEW 04/15/20 FOR CONSTRUCTION WITH APPROVED PERMITS

PROJECT #:	BAC-19-243
DATE:	01/06/20
DRAWN BY:	BM
DESIGNED BY:	POB
CHECKED BY:	POB
SHEET:	M1.6



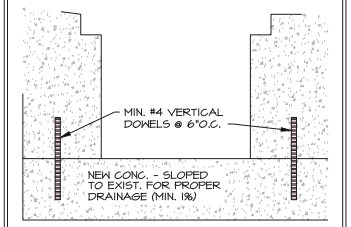
1 P1.0 "DWV" EXISTING AND NEW FLOOR PLAN
SCALE: 3/16"=1'-0"

GENERAL NOTES

1. BUILDING IS EXISTING. COORDINATE WITH ARCHITECTURAL PRINTS AND GC FOR ALL DEMO OF EXISTING PLUMBING SYSTEMS AND FIXTURES AS REQUIRED.
2. DRAWINGS ARE DIAGRAMMATIC IN NATURE. ALL WALL LOCATIONS SHALL BE REFERENCED FOR DIMENSIONS FROM ARCHITECTURAL PRINTS.
3. COORDINATE CONCRETE DEMO AND POUR BACK FOR TIE-INS BELOW SLAB WITH GC.

KEYED NOTES

1. EXISTING FIXTURE TO REMAIN AND BE REUSED.
2. CONNECT INTO AND EXTEND NEW 4" SANITARY PIPING BELOW SLAB TO NEW AREA. COORDINATE WITH GC FOR DEMO AND TRENCHING. COORDINATE POUR BACK OF CONCRETE WITH GC.
3. ROUTE SANITARY PIPING TO FIXTURES. PROVIDE NEW VENT PIPING AND ROUTE VENT PIPING UP THEU ROOF. SEAL PENETRATION WATER TIGHT.
4. FLOOR DRAIN VENTING BELOW SLAB TO NEAREST WALL. COORDINATE FLOOR DRAIN VENTING WITH NEW WALLS. PROVIDE TRAP PRIMER.
5. NEW TRENCH DRAINS. COORDINATE WITH GC FOR FINAL LOCATION.
6. SEE SHEET P1.1 FOR PIPE CONTINUATION AND EXTERIOR CONNECTION(S) TO NEW PIPING FROM TRENCH DRAIN WASH DOWN AREAS. COORDINATE FINAL PIPE ELEVATIONS FROM TRENCH TO TANK WITH CIVIL.



2 P1.0 TRENCH DRAIN DETAIL
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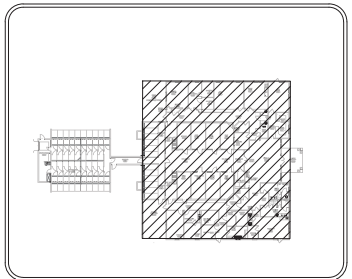

KEY PLAN

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BACON COMMERCIAL DESIGN LLC
PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

Dynamic ENGINEERED SYSTEMS, INC.
(314) 434-1000 FAX 434-8449
(573) 635-3040 FAX 635-3042
www.DynamicEngineeredSystems.com

MEP MODIFICATIONS FOR:
JEFFERSON COUNTY MISSOURI
ANIMAL RESOURCE CENTER
4848 STATE ROUTE 30
HOUSE SPRINGS, MO

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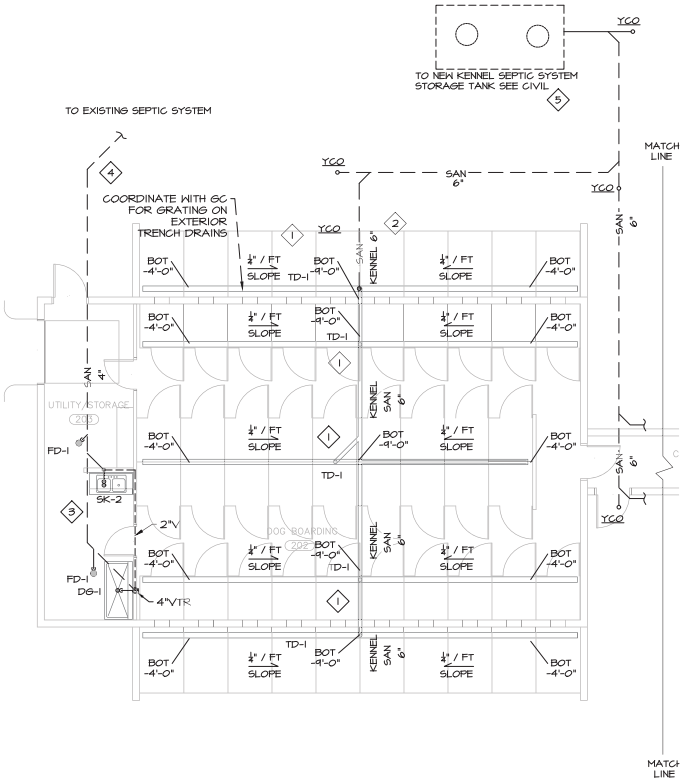
CHECKED BY:	POB
SHEET:	P1.0

GENERAL NOTES

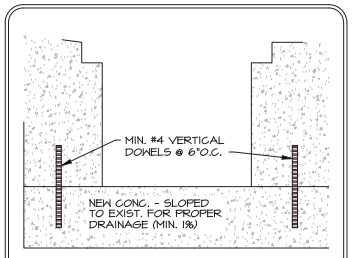
1. BUILDING IS A NEW ADDITION. COORDINATE WITH ARCHITECTURAL PRINTS AND GC FOR NEW AND EXISTING CONNECTION POINTS.
2. DRAWINGS ARE DIAGRAMMATIC IN NATURE. ALL WALL LOCATIONS SHALL BE REFERENCED FOR DIMENSIONS FROM ARCHITECTURAL PRINTS.
3. COORDINATE CONCRETE DEMO AND POUR BACK FOR TIE-INS BELOW SLAB WITH GC.

KEYED NOTES

1. NEW TRENCH DRAINS. COORDINATE WITH GC FOR FINAL LOCATION. PROVIDE GRATE ZURN P6-DSC OR EQUAL. VERIFY WIDTH WITH GC FOR 6" WIDE TRENCH
2. COORDINATE WITH GC AND CIVIL FOR EXTERIOR CONNECTION TO NEW PIPING FOR KENNEL WASH DOWN STORAGE TANK.
3. ROUTE NEW 4" SANITARY THRU SPACE TO NEW FIXTURES.
4. COORDINATE WITH GC AND CIVIL FOR EXTERIOR CONNECTION TO EXISTING SEPTIC LIFT STATION..
5. COORDINATE WITH GC AND CIVIL FOR EXTERIOR CONNECTION TO WASTE STORAGE TANK.



1 P1.1 PIPING NEW ADDITION FLOOR PLAN
SCALE: 3/16"=1'-0"



2 P1.1 TRENCH DRAIN DETAIL
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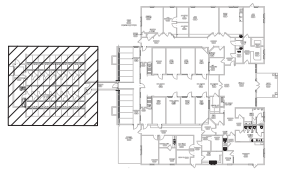

KEY PLAN

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BACON COMMERCIAL DESIGN LLC
PO BOX 605
FENTON, MO 63019
CRYSTAL CITY, MO 63019
636.933.0007

Dynamic ENGINEERED SYSTEMS, INC.
CIVIL | MECHANICAL | PLUMBING | ELECTRICAL | FIRE PROTECTION
OFFICE: (636) 343-8484 FAX: (636) 343-8485
www.DynamicEngineeredSystems.com

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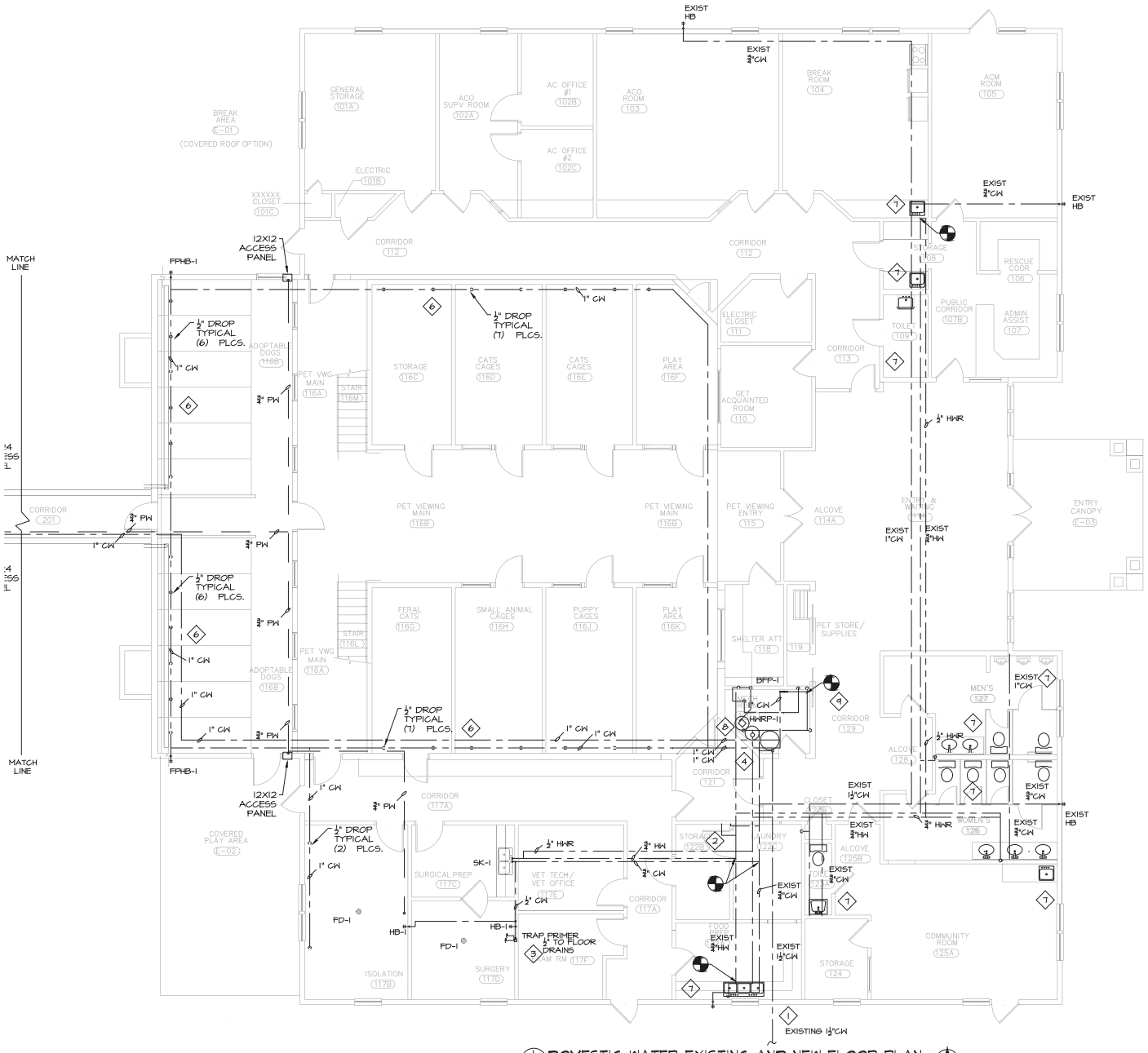


P1.2 DOMESTIC WATER EXISTING AND NEW FLOOR PLAN

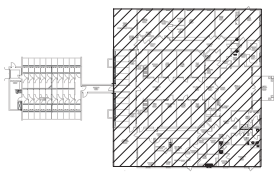
SCALE: 3/16"=1'-0"

GENERAL NOTES

1. BUILDING IS EXISTING. COORDINATE WITH ARCHITECTURAL PRINTS AND GC FOR ALL DEMO OF EXISTING PLUMBING SYSTEMS AND FIXTURES AS REQUIRED.
2. DRAWINGS ARE DIAGRAMMATIC IN NATURE. ALL WALL LOCATIONS SHALL BE REFERENCED FOR DIMENSIONS FROM ARCHITECTURAL PRINTS.
3. COORDINATE CONCRETE DEMO AND POUR BACK FOR TIE-INS BELOW SLAB WITH GC.

KEYED NOTES

1. APPROXIMATE LOCATION OF EXISTING 1½" WATER SERVICE.
2. CONNECT INTO AND EXTEND NEW HOT/COLD WATER PIPING THRU ATTIC SPACE TO NEW SINK. ALL PIPING IN NON CONDITION SPACES TO BE INSULATED.
3. COORDINATE FINAL LOCATION OF MULTI PORT TRAP PRIMER FOR FLOOR DRAINS AND EXTEND NEW ½" PIPING TO FLOOR DRAIN BELOW SLAB. UTILIZE VENT PIPING TRENCH.
4. CONNECT INTO AND EXTEND NEW 1" COLD WATER LOOP THRU SPACE TO NEW ANIMAL AREAS. ROUTE THRU SPACE.
5. NEW PRESSURE WASH PIPING FROM NEW ADDITION. PROVIDE PIPING TO DROPS FOR QUICK CONNECT HOSE ADAPTERS.
6. PROVIDE ¼" DROP WITH FULL PORT BALL VALVE INTO EACH AREA FOR WATERING SYSTEM.
7. EXISTING PLUMBING FIXTURES TO REMAIN AND BE REUSED.
8. PROVIDE NEW HOT WATER LOOP AND HOT WATER RETURN PUMP AT EXISTING HOT WATER HEATER. EXTEND PIPE TO NEW AND EXISTING FIXTURE AND CONNECT INTO AS SHOWN.
9. PROVIDE NEW 1" BACK FLOW PREVENTER. EXTEND NEW PIPING AS SHOWN. PROVIDE TESTING DOCUMENTATION TO MISSOURI DNR AND OWNER.



KEY PLAN

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BACON COMMERCIAL DESIGN LLC
PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

Dynamic ENGINEERED SYSTEMS, INC.
PH 636.464.6800
FAX 636.464.6802
(TOLL FREE) 800.530.2362
www.DynamicEngineeredSystems.com

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JEFFERSON COUNTY MISSOURI ANIMAL RESOURCE CENTER

4848 STATE ROUTE 30
HOUSE SPRINGS, MO

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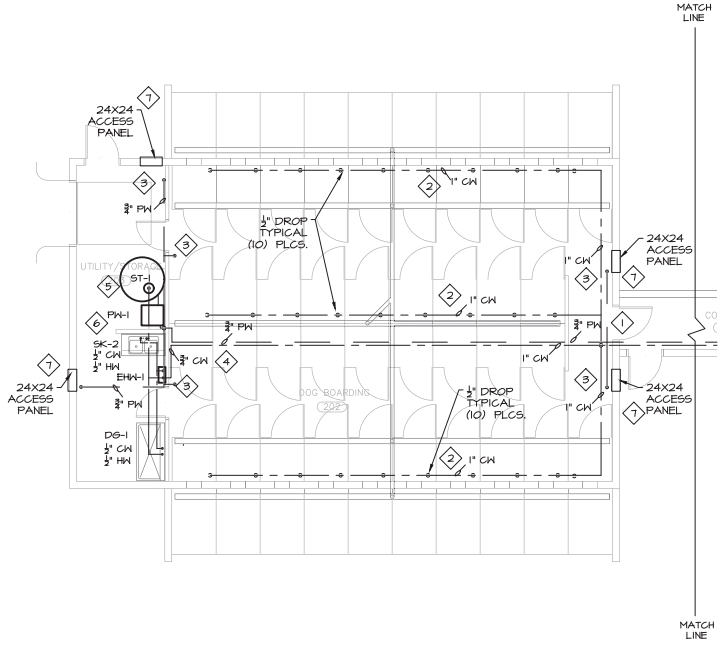
SHEET:	P1.2

GENERAL NOTES

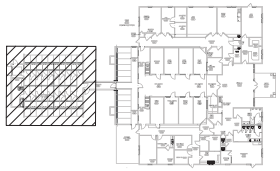
1. BUILDING IS A NEW ADDITION. COORDINATE WITH ARCHITECTURAL PRINTS AND GC FOR NEW AND EXISTING CONNECTION POINTS.
2. DRAWINGS ARE DIAGRAMMATIC IN NATURE. ALL WALL LOCATIONS SHALL BE REFERENCED FOR DIMENSIONS FROM ARCHITECTURAL PRINTS.
3. COORDINATE CONCRETE DEMO AND POUR BACK FOR TIE-INS BELOW SLAB WITH GC.

KEYED NOTES

1. EXTEND 1" CW FROM EXISTING SPACE AND ROUTE THRU NEW KENNEL AREA.
2. PROVIDE ½" DROP WITH FULL PORT BALL VALVE INTO EACH AREA FOR WATERING SYSTEM.
3. NEW PRESSURE WASH PIPING. PROVIDE PIPING TO DROPS FOR QUICK CONNECT HOSE ADAPTERS.
4. COORDINATE ROUTE OF NEW ¾" WATER TO NEW WALL MOUNTED TANKLESS ELECTRIC WATER HEATER.
5. PROVIDE NEW 64" DIA 200 GAL WATER STORAGE TANK. ANCHOR TANK TO WALL.
6. PROVIDE NEW ELECTRIC WALL MOUNTED PRESSURE WASHER.
7. COORDINATE WITH GC FOR FINAL LOCATION OF 24X24 ACCESS DOORS FOR WASHING EXTERIOR KENNEL.



1 P1.3 WATER PIPING NEW ADDITION FLOOR PLAN
SCALE: 3/16"=1'-0"



KEY PLAN

SEAL:

MISSOURI CERTIFICATE OF AUTHORITY #: E-2011001315
PROFESSIONAL ENGINEER #: MO-25068

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PO BOX 605
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MEP MODIFICATIONS FOR:

JEFFERSON COUNTY MISSOURI ANIMAL RESOURCE CENTER

4848 STATE ROUTE 30
HOUSE SPRINGS, MO

REVISIONS:

TAG	DESCRIPTION
0	FOR BIDDING & PERMIT REVIEW 04/15/20 FOR CONSTRUCTION WITH APPROVED PERMITS

PROJECT #:	BAC-19-243
DATE:	01/06/20
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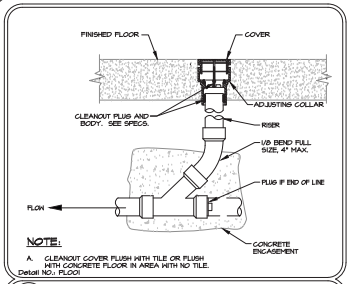
DESIGNED BY:	POB
CHECKED BY:	POB
SHEET:	P1.3



1 P1.4 FLOOR CLEANOUT DETAIL
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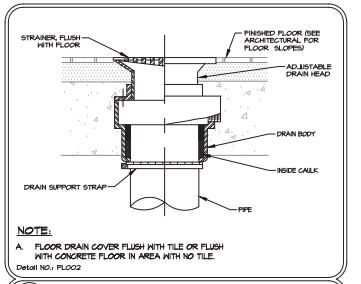
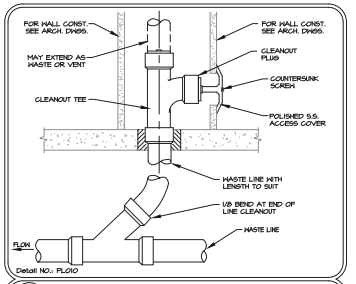
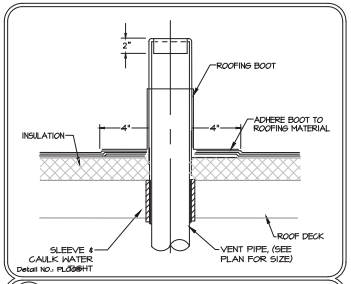


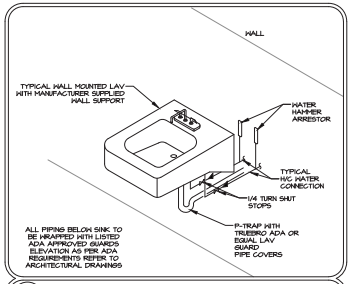
2 P1.4 FLOOR DRAIN DETAIL
SCALE: NTS



3 P1.4 WALL CLEAN OUT DETAIL
SCALE: NTS



4 P1.4 VENT THRU ROOF DETAIL
SCALE: NTS



5 P1.4 ADA WALL LAV DETAIL
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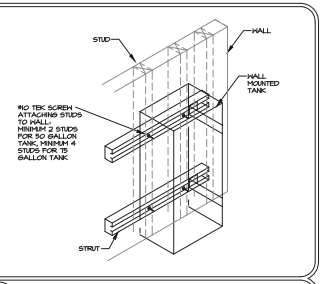
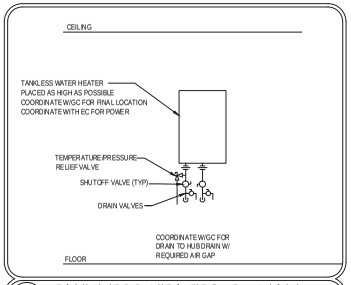
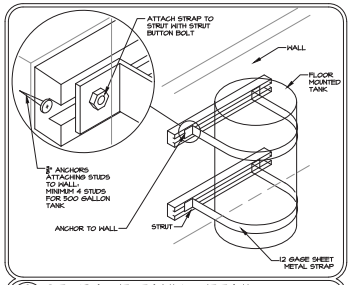
Detail NO.: PL011



6 P1.4 TANKLESS HEATER TO WALL
SCALE: NO SCALE
Detail NO.: PL011D



7 P1.4 TANKLESS HEATER TO WALL
SCALE: NO SCALE

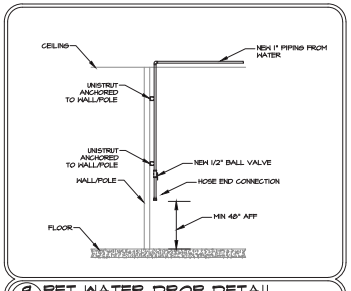


8 P1.4 STORAGE TANK DETAIL
SCALE: NO SCALE
Detail NO.: PL011G

PLUMBING FIXTURE SCHEDULE

MARK	EQUIP.	DESCRIPTION/ ACCESSORIES	MANUFACTURER/ MODEL	NOTES
SK-1	2-BOWL SCRUB SINK	GETINGE 2 BOWL SCRUB SINK, WINTERNAL MIXING VALVE NOT TO EXCEED 115°F. COORDINATE W/OWNER FOR ADDITIONAL OPTIONS	GENTIGE	-
SK-2	2-BOWL SINK	ELKAY 2 BOWL SINK OR EQUAL WITH SPRAYER FAUCET	ELKAY DELTA	-
DG-1	DOG GROOMING SINK	COORDINATE WITH OWNER	-	-
EWH-1	ELECTRIC WATER HEATER	RHEEM RTEX-18 WALL MOUNTED TANKLESS ELECTRIC WATER HEATER W/INLINE FLOW REGULATOR RTE1000181 SET WATER HEATER TO 110°F MAX	RHEEM	1,2
FD-1	FLOOR DRAIN	CAST IRON BODY WITH STANDARD SATIN NICKEL BRONZE ADJUSTABLE STRAINER, INTEGRAL CLAMPING DEVICE, BOTTOM OUTLET	JOSAM 30000-5-50	1,2
FCO-1	FLOOR CLEANOUT	ADJUSTABLE CLEANOUT WITH SQUARE, HEAVY DUTY NICKEL BRONZE TOP W/REMOVABLE THREADED PLUG	JOSAM 56030	1,2
WCO-1	WALL CLEANOUT	TAPERED PLUG AND 9" SQUARE STAINLESS STEEL SECURED ACCESS COVER W/NICKEL BRONZE FRAME W-8480-S9	JOSAM 56030	1,2
ST-1	STORAGE TANK	48" DIA. 75"H 500 GAL WATER STORAGE TANK	NORWESC 43101 BLACK	1,2
PW-1	PRESSURE WASHER	3000 PSI ELECTRIC STATIONARY PRESSURE WASHER	NORTHSTAR #157304	1,2
HWR-1	HOT WATER RETURN PUMP	HOT WATER RETURN PUMP 6.5 GAL FLOW AND 10FT HEAD W/TIMER AND LINE CORD	GRUNDFOS UP15-10 SUP TLC	1,2
TP-1	TRANSFER PUMP	5HP 230V, 30 AMP CAT PUMP ¼ HP 320 GPH TRANSFER PUMP W/PRESSURE SWITCH	DRUMMAND #63317	1,2
ET-1	EXPANSION TANK	50 PSI BLADDER TANK TO ACCEPT 44 GAL OF LIQUID	AMTROL WX-251-0	1,2
BFP-1	BACKFLOW	WATTS SERIES 009 BACKFLOW ASSEMBLEY	WATTS	1,2

NOTES:
1. CONTRACTOR MAY PROVIDE APPROVED EQUAL.
2. COORDINATE ALL FIXTURE SELECTIONS WITH OWNER REPRESENTATIVE PRIOR TO PURCHASING.
3. COORDINATE REQUIREMENTS WITH DENTAL EQUIPMENT SUPPLIER.



9 P1.4 PET WATER DROP DETAIL
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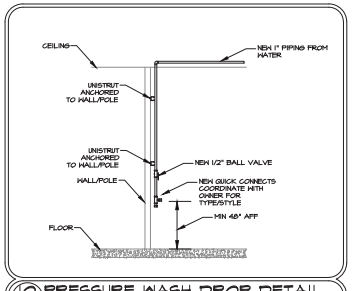
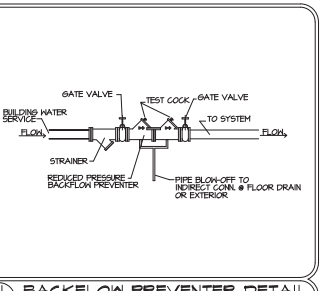
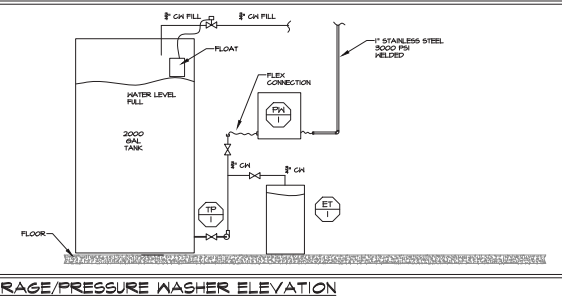
Detail NO.: PL012



10 P1.4 PRESSURE WASH DROP DETAIL
SCALE: NO SCALE
Detail NO.: PL013



11 P1.4 BACKFLOW PREVENTER DETAIL
SCALE: NO SCALE
Detail NO.: PL009



10 P1.4 STORAGE/PRESSURE WASHER ELEVATION
SCALE: NO SCALE

SEAL:

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PROFESSIONAL ENGINEER #: MO-2E069

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CIVIL/STRUCTURAL/MEP/FP
OFFICE: 636.933.0007 FAX: 636.933.0007
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4848 STATE ROUTE 30
HOUSE SPRINGS, MO

REVISIONS:

TAG	DESCRIPTION
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PROJECT #:	BAC-19-243
DATE:	01/06/20
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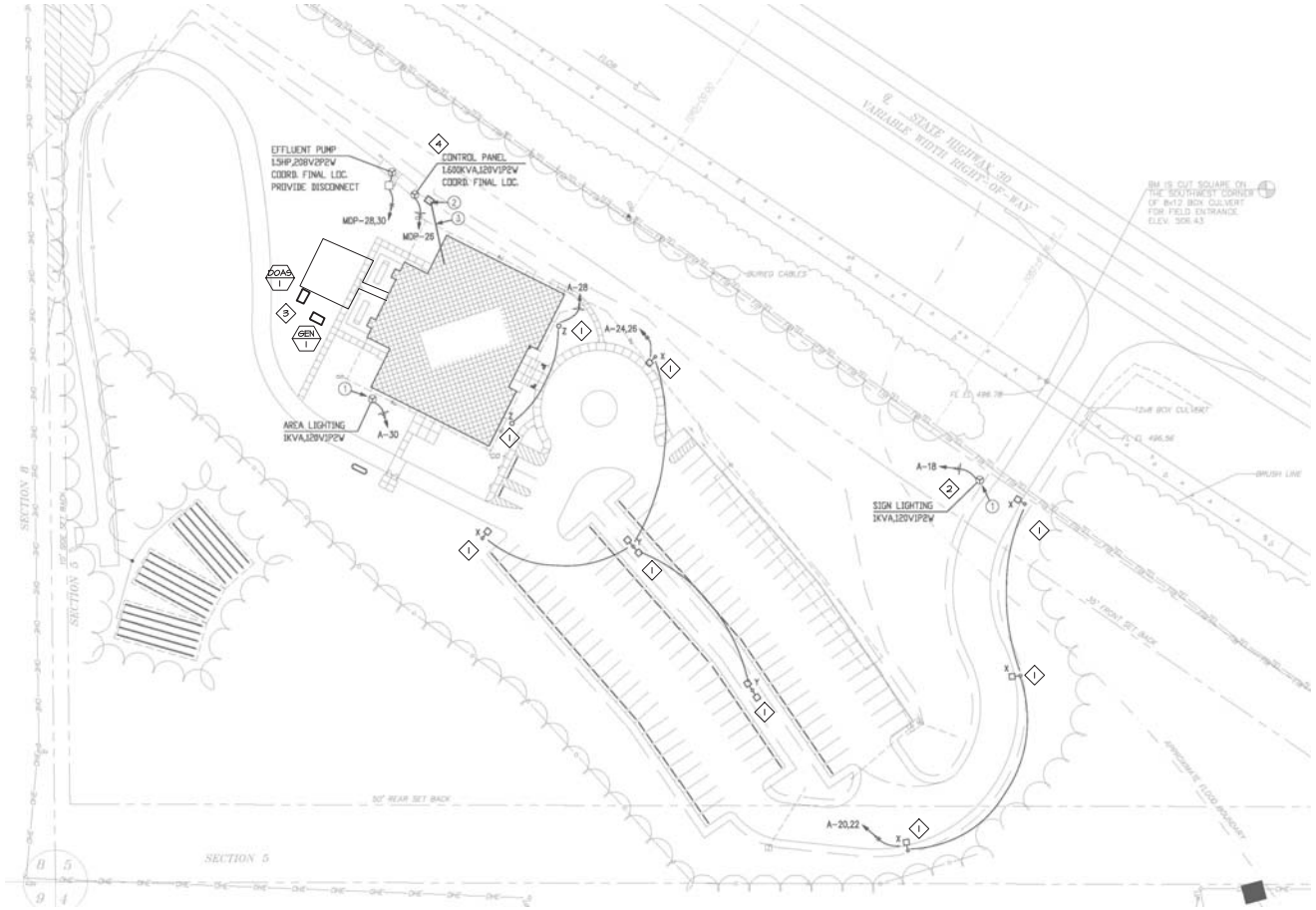
DESIGNED BY:	POB
CHECKED BY:	POB
SHEET:	P1.4

GENERAL NOTES

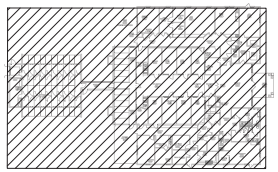
1. CIRCUIT NUMBERS ARE INDICATED ONLY TO SHOW DISTINCTION BETWEEN THE CIRCUITS AND PANELS. ELECTRICAL CONTRACTOR SHALL USE EXISTING/NEW CIRCUITS AS REQUIRED.
2. FOLLOW ALL THE LOCAL AMENDMENTS TO THE NEC, INCLUDING A GROUNDING CONDUCTOR IN ALL RACEWAYS.
3. ELECTRICAL CONTRACTOR SHALL VERIFY CEILING TYPES WITH ARCHITECTURAL DRAWINGS.
4. CONTRACTOR MAY AT HIS OPTION SUBSTITUTE A SIMILAR FIXTURE IN LIEU OF RELAMPING EXISTING FIXTURE. SUBSTITUTION SHALL INCLUDE ALL LABOR AND MATERIALS TO REPLACE WITH A FULLY FUNCTIONING FIXTURE.
5. NOTATION AND EQUIPMENT SHOWN IN LIGHT TYPESET IS EXISTING; FIELD VERIFY.

KEYED NOTES

1. CONFIRM EXISTING SITE LIGHTING IS IN GOOD WORKING ORDER. CONFIRM TIME CLOCK AND PHOTO CELL OPERATION FOR ITS CONTROL. NOTIFY OWNER OF ANY DEFECTS FOUND.
2. CONFIRM EXISTING SITE SIGNAGE IS IN GOOD WORKING ORDER. CONFIRM PROPER OPERATION. NOTIFY OWNER OF ANY DEFECTS FOUND.
3. NEW EQUIPMENT SEE FLOOR PLAN VIEW.
4. SEWAGE EJECTOR CONTROL SYSTEM. WORK W/PLUMBER TO CONFIRM PROPER WORKING OPERATION. NOTIFY OWNER OF ANY DEFECTS FOUND.



1 EXISTING SITE LIGHTING AND NEW EQUIPMENT
E0.0 SCALE: NTS



KEY PLAN

SEAL:

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PROFESSIONAL ENGINEER #: MO-25068

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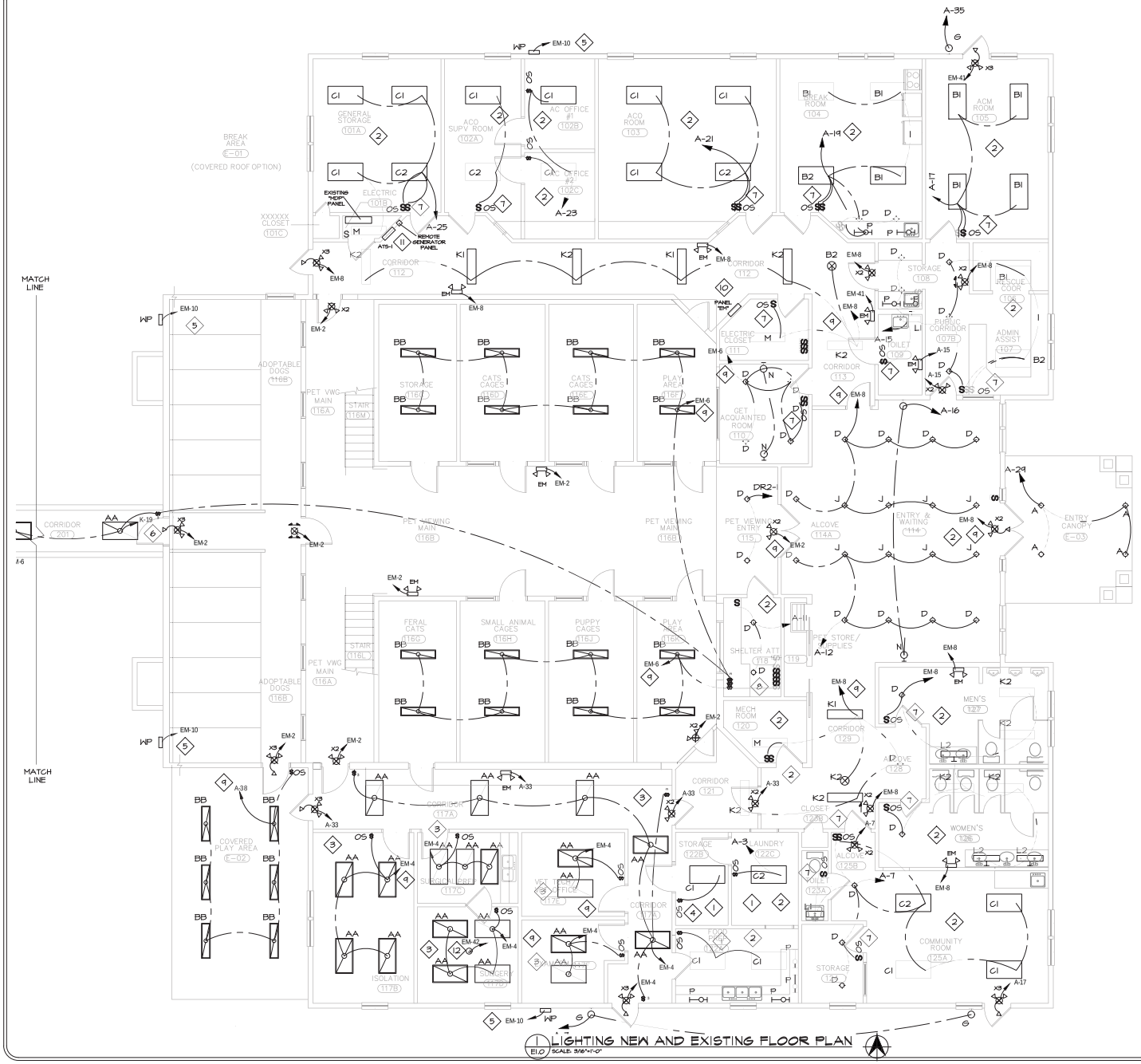
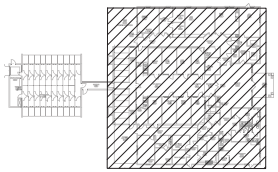


GENERAL NOTES

1. CIRCUIT NUMBERS ARE INDICATED ONLY TO SHOW DISTINCTION BETWEEN THE CIRCUITS AND PANELS. ELECTRICAL CONTRACTOR SHALL USE EXISTING/NEW CIRCUITS AS REQUIRED WITHOUT EXCEEDING NEC MANDATED CURRENT LIMITS AND RECOMMENDED VOLTAGE DROP LIMITS .
2. FOLLOW ALL THE LOCAL AMENDMENTS TO THE NEC, INCLUDING A GROUNDING CONDUCTOR IN ALL RACEWAYS.
3. ELECTRICAL CONTRACTOR SHALL VERIFY CEILING TYPES WITH ARCHITECTURAL DRAWINGS.
4. CONTRACTOR MAY AT HIS OPTION SUBSTITUTE A SIMILAR FIXTURE IN LIEU OF RELAMPING EXISTING FIXTURE. SUBSTITUTION SHALL INCLUDE ALL LABOR AND MATERIALS TO REPLACE WITH A FULLY FUNCTIONING FIXTURE.
5. ALL EMERGENCY LIGHTS AND EXIT LIGHTS TO HAVE 90 MINUTE BATTERY BACK UP TO MEET NEC. THEY ARE ALSO ON EMERGENCY PANEL SO WHEN MANUAL TRANSFER SWITCH IS ENERGIZED DURING AN OUTAGE.
6. SEE SHEET MEP1.3 FOR ADDITIONAL "EXISTING BUILDING ELECTRICAL GENERAL NOTES"

KEYED NOTES

1. COORDINATE WITH GC AND OWNER FOR FINAL LIGHT FIXTURE SELECTION, INSTALLATION, AND LIGHT FIXTURE CONTROL. ALL LIGHTING SHOWN WITH LED FIXTURES. CIRCUIT BACK TO PANEL EXISTING "A" AND RELABEL ACCORDINGLY.
2. ALL EXISTING LIGHTING TO BE RE LAMPED WITH LED BULBS MATCHING WATT EQUIVALENCY OF EXISTING FIXTURE. EACH FIXTURE TO BE INSPECTED AND OWNER TO BE NOTIFIED OF ANY DEFECTS FOUND.
3. MODIFY EXISTING LIGHTING CIRCUITS IN THIS AREA DURING DEMO PHASE TO ACCOMMODATE NEW LAYOUT. TRACE CIRCUIT BACK TO PANEL AND CHECK FOR CAPACITY AND RELABEL ACCORDINGLY.
4. COORDINATE WITH GC/OWNER FOR LIGHT SWITCH RELOCATION FOR NEW WALLS.
5. NEW EXTERIOR WALL PACK. COORDINATE WITH GC AND ARCHITECT FOR FINAL ELEVATION. PROVIDE WITH DUSK TO DAWN SENSOR.
6. NEW ADDITION LIGHTING. SEE SHEET E1.1 FOR CONTINUATION. ALL CIRCUITS SHALL BE SOURCED FROM PANEL "K".
7. PROVIDE AN ALTERNATIVE FOR EXISTING LIGHT SWITCHES TO BE UPGRADED TO OCCUPANCY SENSORS.
8. EXISTING LIGHTING CONTROLS TO REMAIN & BE REUSED. VERIFY PROPER OPERATION. NOTIFY OWNER OF ANY DEFECTS FOUND.
9. RE-CIRCUIT EXISTING LIGHTING AND/OR NEW LIGHTING TO BE ON NEW STANDBY GENERATOR PANEL.
10. SURFACE MOUNTED EMERGENCY PANEL. EXTEND CIRCUITS TO NEW LOCATION. PANEL POWERED FROM MANUAL TRANSFER SWITCH.
11. LOCATE AUTOMATIC TRANSFER SWITCH AND GENERATOR REMOTE START PANEL ON THIS WALL.
12. EMERGENCY SURGERY LIGHT PROVIDED BY OWNER INSTALLED BY CONTRACTOR.



KEY PLAN

SEAL:

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PROFESSIONAL ENGINEER #: MO-2006B

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HOUSE SPRINGS, MO

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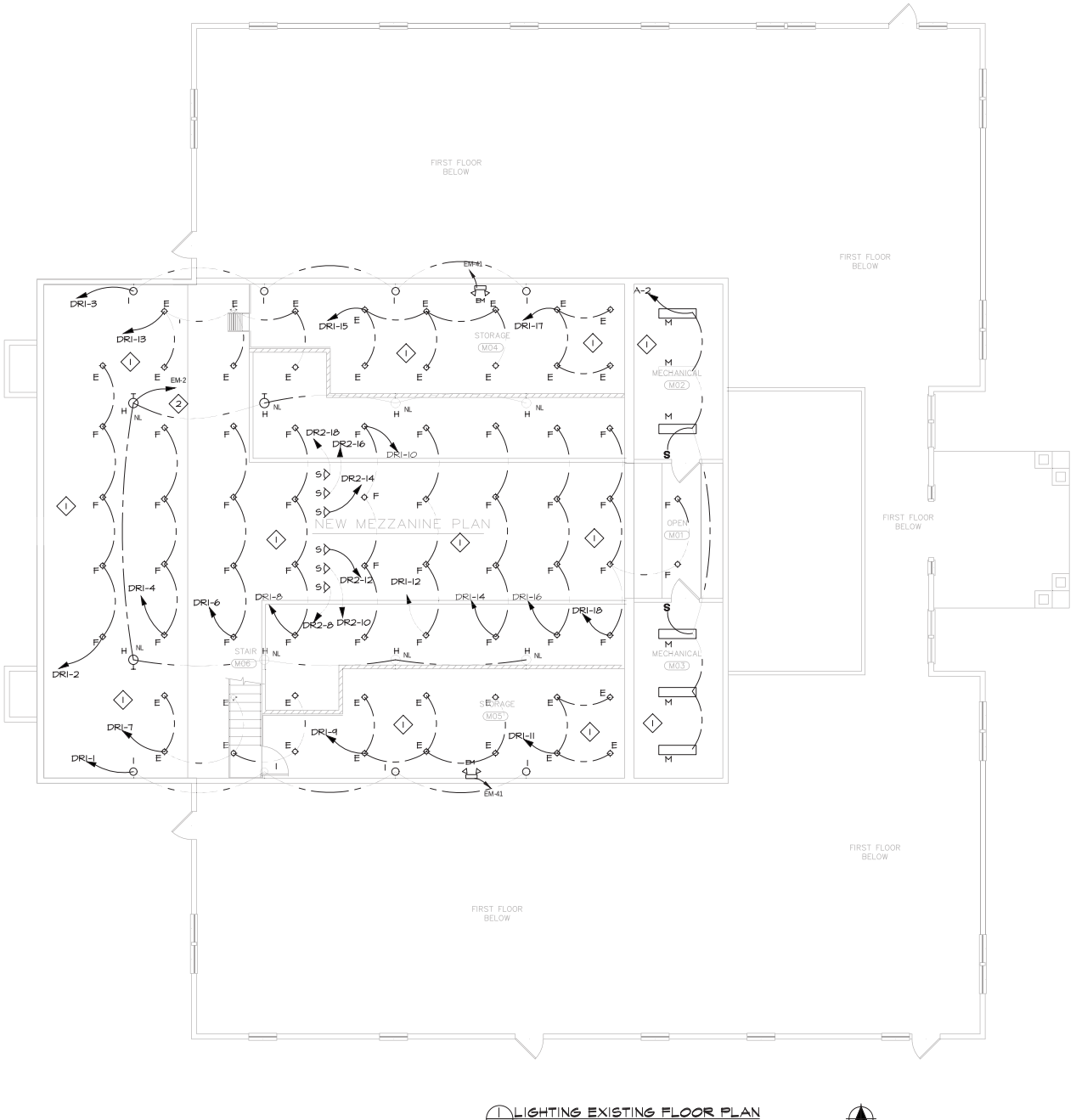

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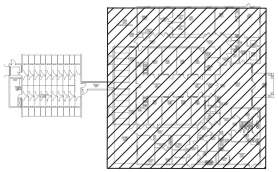
2. FOLLOW ALL THE LOCAL AMENDMENTS TO THE NEC, INCLUDING A GROUNDING CONDUCTOR IN ALL RACEWAYS.
3. ELECTRICAL CONTRACTOR SHALL VERIFY CEILING TYPES WITH ARCHITECTURAL DRAWINGS.
4. SEE SHEET MEP1.3 FOR ADDITIONAL "EXISTING BUILDING ELECTRICAL GENERAL NOTES"

KEYED NOTES

1. ALL EXISTING LIGHTING TO BE RE LAMPED WITH LED BULBS MATCHING WATT EQUIVALENCY OF EXISTING FIXTURE. SEE EXISTING FIXTURE SCHEDULE.
2. REPOWER EXISTING CIRCUIT FROM NEW EMERGENCY PANEL. LIGHTS TO BE NIGHT LIGHT FUNCTION TO BE CONSTANT ON.

1 / E1.1 LIGHTING EXISTING FLOOR PLAN
SCALE: 3/16"=1'-0"



KEY PLAN

SEAL:

MISSOURI CERTIFICATE OF AUTHORITY #: E-2011001315
PROFESSIONAL ENGINEER #: MO-25069

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SHEET:	E1.1

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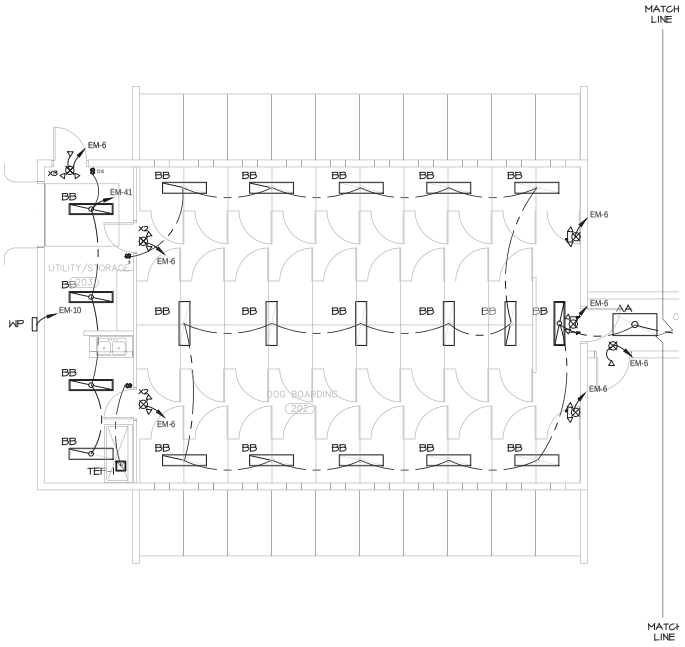
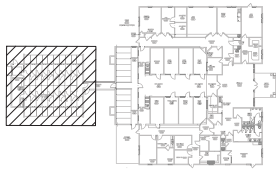
3. ELECTRICAL CONTRACTOR SHALL VERIFY CEILING TYPES WITH ARCHITECTURAL DRAWINGS.
4. SEE SHEET MEP1.3 FOR ADDITIONAL "EXISTING BUILDING ELECTRICAL GENERAL NOTES"

KEYED NOTES

1. NEW ADDITION LIGHTING TO LED FIXTURES. ALL CIRCUITS TO BE PULLED FROM PANEL "K".



1 E1.2 LIGHTING NEW ADDITION FLOOR PLAN
SCALE: 3/16"=1'-0"



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CHECKED BY:	POB
SHEET:	E1.2

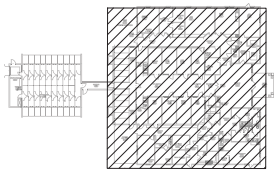
1 POWER NEW AND EXISTING FLOOR PLAN
E1.3 SCALE: 3/16"=1'-0"

GENERAL NOTES

1. CIRCUIT NUMBERS ARE INDICATED ONLY TO SHOW DISTINCTION BETWEEN THE CIRCUITS AND PANELS. ELECTRICAL CONTRACTOR SHALL USE EXISTING/NEW CIRCUITS AS REQUIRED.
2. FOLLOW ALL THE LOCAL AMENDMENTS TO THE NEC, INCLUDING A GROUNDING CONDUCTOR IN ALL RACEWAYS.
3. ELECTRICAL CONTRACTOR SHALL VERIFY CEILING TYPES WITH ARCHITECTURAL DRAWINGS.
4. SEE SHEET MEP1.3 FOR ADDITIONAL "EXISTING BUILDING ELECTRICAL GENERAL NOTES"
5. COORDINATE WITH OWNER FOR FINAL LOCATION OF WIRING DEVICES AND ELEVATIONS.
6. PROVIDE FUSED DISCONNECTS FOR ALL NEW MECHANICAL EQUIPMENT.

KEYED NOTES

1. COORDINATE WITH GC FOR CIRCUITS TO BE TERMINATED IN THIS AREA DURING DEMO PHASE. COORDINATE WITH MC FOR REMOVAL OF EXISTING ROOF TOP MAU AND EF-1. REMOVE CIRCUITS BACK TO PANEL
2. COORDINATE WITH GC AND OWNER FOR FINAL OUTLET LOCATIONS. CIRCUIT BACK TO PANEL EXISTING AND RELABEL ACCORDINGLY. VERIFY CIRCUIT FOR CAPACITY.
3. NEW WASHER DRYER OUTLETS. COORDINATE WITH GC FOR FINAL LOCATION. EXISTING CIRCUITS FROM KITCHEN EQUIPMENT REMOVED DURING DEMO PHASE TO BE MODIFIED AND REUSED. VERIFY CONDUIT RUNS BACK TO PANEL. CHECK CAPACITY AND RE CIRCUIT.
4. ADD OR RELOCATE OUTLETS AS SHOWN. EXTEND EXISTING POWER CIRCUIT.
5. INSTALL OWNER PROVIDED SURGERY LIGHT. WIRE INTO EMERGENCY POWER. LIGHT CEILING MOUNTED. WIRED TO EMERGENCY CIRCUIT.
6. EMERGENCY POWER SPECIAL DUTY OUTLET 220V 1φ PROVIDE ORANGE RECEPTACLE TO IDENTIFY EMERGENCY POWER.
7. PROVIDE ORANGE RECEPTACLES TO IDENTIFY STANDBY POWER. IDENTIFY CIRCUIT ON RECEPTACLE COVER.
8. ALL ELECTRICAL IN THIS VET CLINIC AREA TO BE IN ACCORDANCE WITH NEC 517.
9. DEDICATED ANESTHESIA OUTLET.
10. OWNER PROVIDED WALL MOUNTED PROCEDURE LIGHT, CONTRACTOR SHALL RECEIVE AND INSTALL. NOTIFY OWNER OF ANY DEFECTS FOUND.
11. EXISTING CIRCUIT TO BE RELOCATED TO EMERGENCY PANEL.



KEY PLAN

SEAL:

MISSOURI CERTIFICATE OF AUTHORITY #: E-2011001315
PROFESSIONAL ENGINEER #: MO-25069

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PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

Dynamic ENGINEERED SYSTEMS, INC.
2727 N. Ballas Rd. Suite 200
O'Fallon, MO 63366-2662
www.DynamicEngineeredSystems.com

MEP MODIFICATIONS FOR:
JEFFERSON COUNTY MISSOURI ANIMAL RESOURCE CENTER
4848 STATE ROUTE 30
HOUSE SPRINGS, MO

REVISIONS:

TAG	DESCRIPTION
0	FOR BIDDING & PERMIT REVIEW 04/15/20 FOR CONSTRUCTION WITH APPROVED PERMITS

PROJECT #:	BAC-19-243
DATE:	01/06/20
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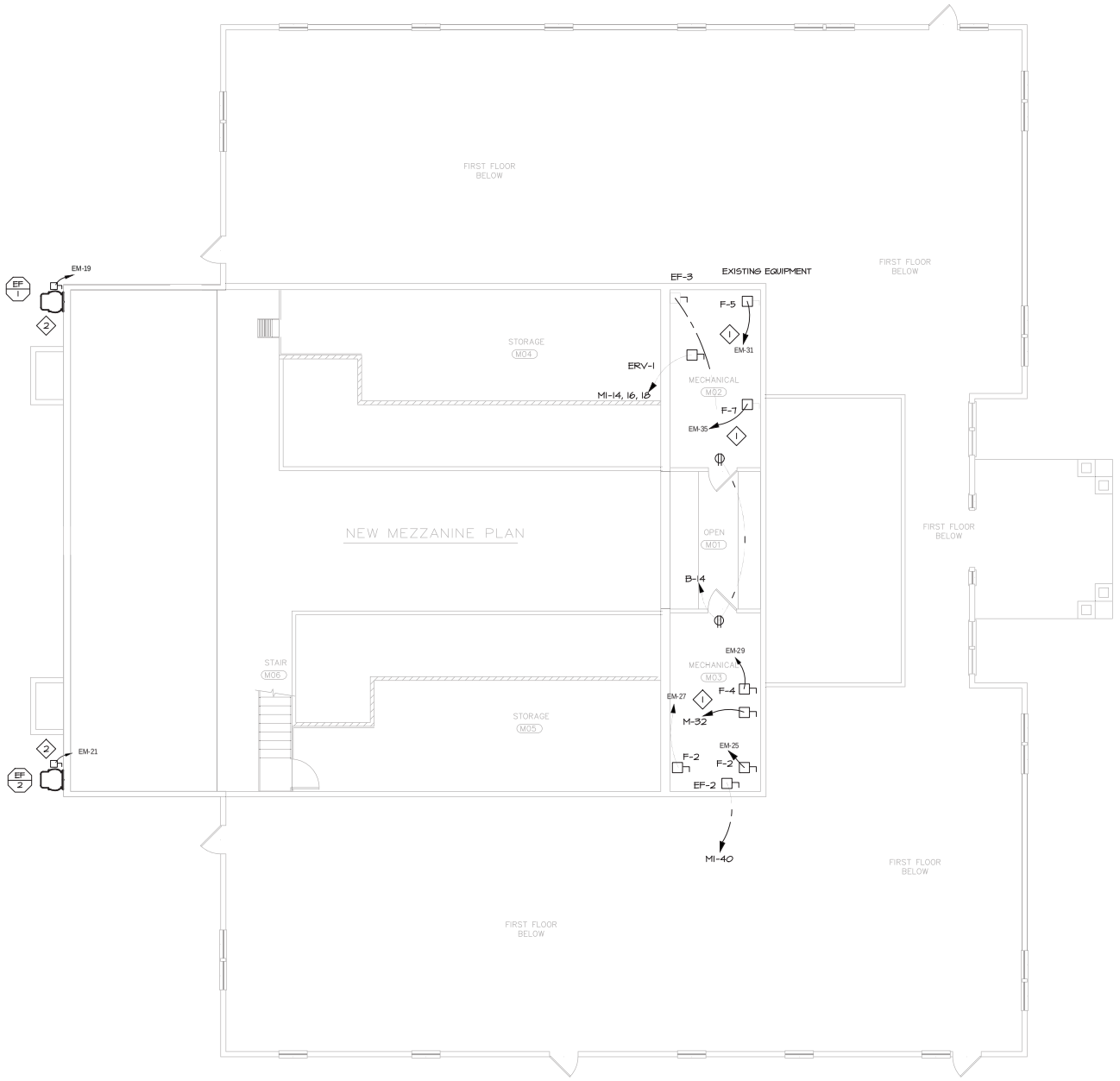
SHEET:	E1.3



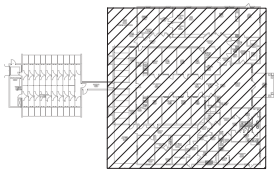
1 EXISTING/NEW MEZZANINE POWER PLAN
E1.4 SCALE: 3/16"=1'-0"

GENERAL NOTES

1. CIRCUIT NUMBERS ARE INDICATED ONLY TO SHOW DISTINCTION BETWEEN THE CIRCUITS AND PANELS. ELECTRICAL CONTRACTOR SHALL USE EXISTING/NEW CIRCUITS AS REQUIRED.
2. FOLLOW ALL THE LOCAL AMENDMENTS TO THE NEC, INCLUDING A GROUNDING CONDUCTOR IN ALL RACEWAYS.
3. ELECTRICAL CONTRACTOR SHALL VERIFY CEILING TYPES WITH ARCHITECTURAL DRAWINGS.
4. SEE SHEET MEP1.3 FOR ADDITIONAL "EXISTING BUILDING ELECTRICAL GENERAL NOTES"
5. COORDINATE WITH OWNER FOR FINAL LOCATION OF WIRING DEVICES AND ELEVATIONS.
6. PROVIDE FUSED DISCONNECTS FOR ALL NEW MECHANICAL EQUIPMENT.

KEYED NOTES

1. EXISTING FURNACE TO BE WIRED TO STANDBY PANEL TO BE ABLE TO PROVIDE EMERGENCY HEATING IN THE WINTER THRU GENERATOR POWER.
2. CONTINUOUS EXHAUST SYSTEM TO BE POWERED BY STANDBY PANEL.



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GENERATOR SCHEDULE

PLAN MARK	MANUFACTURER & MODEL NO.	VOLT	PHASE/Hz	RATED Kw	FUEL	WEIGHT (LBS)	REMARKS
GEN-1	KOHLER 125REZGC	208	3/60	81.6	LP		1,2,3,4,5,6,7,8,9,10,11,12

REMARKS:
1. WEATHER PROOF ENCLOSURE
2. REMOTE GENERATOR STATUS & START PANEL
3. FAST RESPONSE
4. INTERGRAL EXHAUST MANIFOLD
5. BLOCK HEATER
6. BATTERY CHARGER
7. LINE CIRCUIT BREAKER
8. 5 YEAR COMPREHENSIVE WARRANTY
9. FACTORY START UP
10. ENGINE FLUIDS ADDED
11. CONTACT FRANK @ CK POWER FKURZ@CKPOWER.COM
12. OTHER GEN SETS TO BE QUOTED AS AN ALTERNATE ADD/DEDUCT

TRANSFER SWITCH SCHEDULE

PLAN MARK	MANUFACTURER & MODEL NO.	VOLT	PHASE/Hz	SWITCH	POLES/WIRES	REMARKS
TS-1	KOHLER KSS	208	3/60	225 AMP	3POLE/4 WIRE	1,2,3,4,5,6,7,8,9,10

REMARKS:
1. DECISION MAKER MPAC 1200 CONTROLLER (AUTOMATIC)
2. 225 AMP SWITCH
3. NEMA 1
4. DIGITAL METER
5. 5 YEAR COMPREHENSIVE WARRANTY
6. REMOTE SERIAL ANNUCIATOR
7. ETHERNET COMMUNICATIONS
8. CURRENT SENSING
9. CONTACT FRANK @ CK POWER FKURZ@CKPOWER.COM
10. OTHER TRANSFER SWITHCES TO BE QUOTED AS ALTERNATE ADD/DEDUCT

GENERAL NOTES

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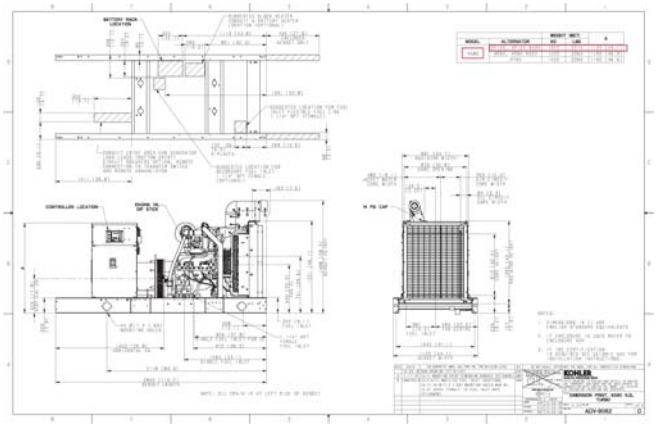
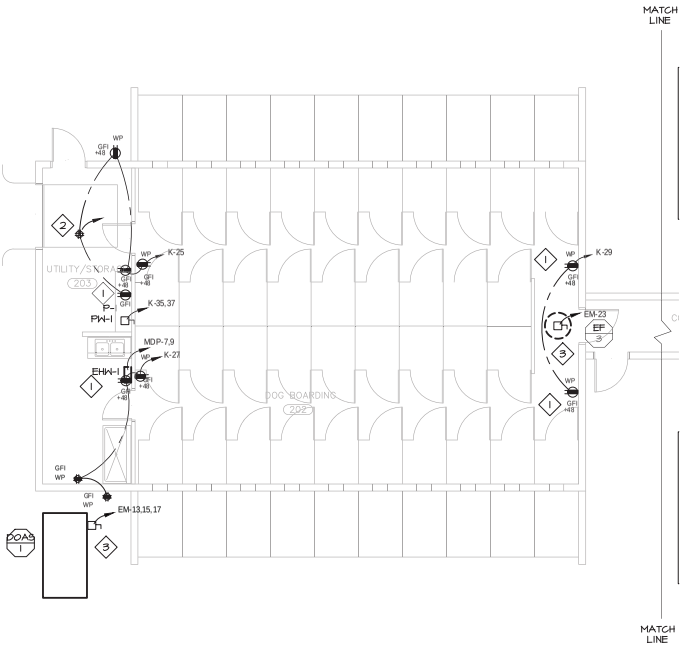
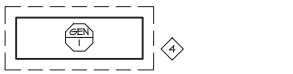


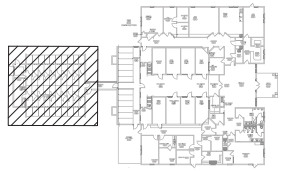


KEYED NOTES

1. COORDINATE WITH GC FOR FINAL LOCATION OF OUTLETS IN THIS SPACE.
2. PROVIDE RECEPTACLE FOR FUTURE GARAGE DOOR OPENER.
3. COORDINATE FINAL POWER REQUIREMENTS WITH MC.
4. EXTERIOR PAD MOUNTED GENERATOR. COORDINATE WITH CIVIL AND NEW ADDITION FOOTPRINT FOR FINAL LOCATION.



1 E1.5 POWER NEW ADDITION FLOOR PLAN
SCALE: 3/16"=1'-0"



KEY PLAN

SEAL:

MISSOURI CERTIFICATE OF AUTHORITY #: E-2011001315
PROFESSIONAL ENGINEER #: MO-25068

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BACON COMMERCIAL DESIGN LLC
PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

Dynamic ENGINEERED SYSTEMS, INC.
(314) 638-3600 FAX 638-3602
OFFICE: 1401 ELBAH ROAD
OTTAWA, ILLINOIS 61350
www.DynamicEngineeredSystems.com

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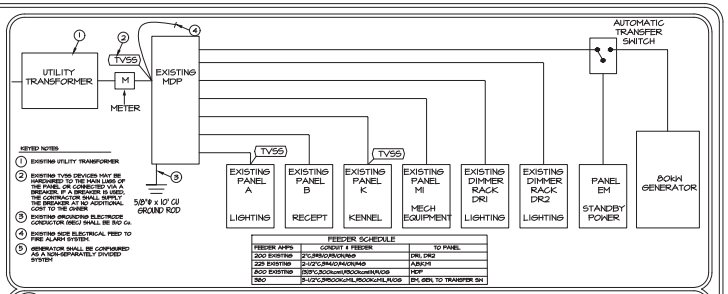
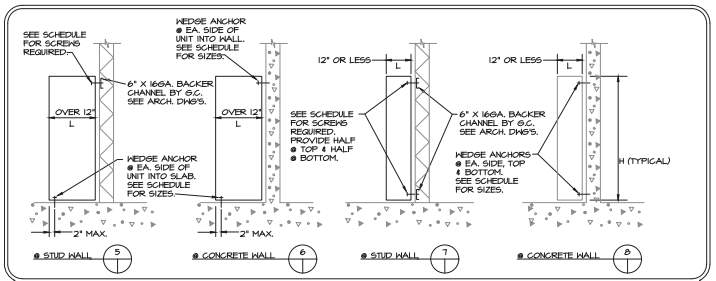
SHEET:	E1.5

EXISTING LUMINARY SCHEDULE

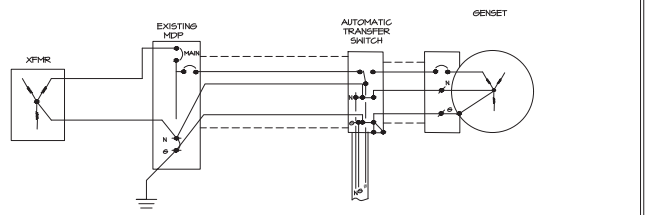
CALLOUT	LAMP	DESCRIPTION	MOUNTING	DESCRIPTION	VOLTS	NOTES
A EXIST	(1) 70 WATT METAL HALIDE	EXTERIOR RECESSED DOWNLIGHT	RECESSED	CAPRI: CM6-M70-V82	120V/1ø/2W	COORDINATE INSTALLATION OF FIXTURE WITH SLOPE CEILING CONSTRUCTION
B1 EXIST	(3) 32 WATT, T8, RELAMP TO LED	2'x4' SURFACE MOUNT PARABOLIC TROFFER	SURFACE	DAYBRITE: 2S4P332-365L-PAF	120V/1ø/2W	PROVIDE ADDITIONAL BALLAST AS NECESSARY TO ACCOMMODATE FIXTURE
B2 EXIST	(3) 32 WATT, T8, RELAMP TO LED	2'x4' SURFACE MOUNT PARABOLIC TROFFER WITH EMERGENCY BALLAST	SURFACE	DAYBRITE: 2S4P332-365L-PAF ET	120V/1ø/2W	PROVIDE ADDITIONAL BALLAST AS NECESSARY TO ACCOMMODATE FIXTURE
C1 EXIST	(3) 32 WATT, T8, RELAMP TO LED	2'x4' SURFACE MOUNT TROFFER	SURFACE	DAYBRITE: 2SM332-RAI2-PAF	120V/1ø/2W	PROVIDE ADDITIONAL BALLAST AS NECESSARY TO ACCOMMODATE FIXTURE
C2 EXIST	(3) 32 WATT, T8, RELAMP TO LED	2'x4' SURFACE MOUNT TROFFER WITH EMERGENCY BALLAST	SURFACE	DAYBRITE: 2SM332-RAI2-PAF ET	120V/1ø/2W	PROVIDE ADDITIONAL BALLAST AS NECESSARY TO ACCOMMODATE FIXTURE
D EXIST	(1) 100 PAR/CAP/IR/FL40, RELAMP TO LED	RECESSED DOWNLIGHT	RECESSED	HURT VERSEN: CT302	120V/1ø/2W	FIXTURE SHALL BE DIMMABLE
E EXIST	(1) G250 PAR FLOOD, RELAMP TO LED	RECESSED DOWNLIGHT	RECESSED	HURT VERSEN: CT308	120V/1ø/2W	FIXTURE SHALL BE DIMMABLE
F EXIST	(1) G250 PAR 38 FLOOD, RELAMP TO LED	RECESSED DOWNLIGHT	RECESSED	HURT VERSEN: CT311	120V/1ø/2W	COORDINATE WITH SLOPED CEILING FIXTURE SHALL BE DIMMABLE
G EXIST	(1) 60 WATT INCANDESCENT, RELAMP TO LED	EXTERIOR WALL MOUNTED LUMINAIRE	WALL	CAPITAL: 9826WH	120V/1ø/2W	FIXTURE SHALL HAVE WHITE FINISH
H EXIST	(1) 175 WATT METAL HALIDE	WALL-MOUNTED UPLIGHT LUMINAIRE	SURFACE	INSIGHT: VVL-421-I-H-PP	120V/1ø/2W	BOTTOM OF FIXTURE SHALL BE 22' A.F.F.
I EXIST	(1) 250 WATT QUARTZ	WALL-MOUNT LUMINAIRE	SURFACE	INSIGHT: VVM-501-I-H-PP	120V/1ø/2W	BOTTOM OF FIXTURE SHALL BE 14' A.F.F.
J EXIST	(1) 80 PAR/CAP/IR/FL25, RELAMP TO LED	RECESSED IC RATED DOWNLIGHT	RECESSED	CAPRI: C561C55-5R40CLR	120V/1ø/2W	COORDINATE WITH SLOPED CEILING FIXTURE SHALL BE DIMMABLE & I.C. RATED
K1 EXIST	(3) 32 WATT T8, RELAMP TO LED	SUSPENDED DIRECT/INDIRECT FIXTURE	PENDANT	CORELITE: AP-WB-378-IC-120-PP12-4	120V/1ø/2W	PENDANT MOUNT ON 12" RIGID PENDANT
K2 EXIST	(3) 32 WATT T8, RELAMP TO LED	SUSPENDED DIRECT/INDIRECT FIXTURE WITH EMERGENCY BALLAST	PENDANT	CORELITE: AP-WB-378-IEB-120-PP12-4	120V/1ø/2W	PENDANT MOUNT ON 12" RIGID PENDANT
L1 EXIST	(3) 60 WATT INCANDESCENT, RELAMP TO LED	WALL-MOUNT VANITY LUMINAIRE	WALL	CAPITAL: 1033PB-105	120V/1ø/2W	MOUNT ABOVE MIRROR
L2 EXIST	(4) 60 WATT INCANDESCENT, RELAMP TO LED	WALL-MOUNT VANITY LUMINAIRE	WALL	CAPITAL: 1034PB-108	120V/1ø/2W	MOUNT ABOVE MIRROR
M EXIST	(2) 32 WATT T8, RELAMP TO LED	SURFACE MOUNT WRAPAROUND	SURFACE	DAY-BRITE: SWN232	120V/1ø/2W	
N EXIST	(1) 60 WATT INCANDESCENT, RELAMP TO LED	WALL-MOUNT SCONCE	WALL	CAPITAL: 1172IVB	120V/1ø/2W	
P EXIST	(1) 17 WATT, T8, RELAMP TO LED	UNDERCABINET LUMINAIRE	SURFACE	DAY-BRITE: SUC1145-120-R5	120V/1ø/2W	
R1 EXIST	(1) HALOGEN/LED	WALL-MOUNTED LED EXIT WITH EMERGENCY LIGHTS	WALL	MCPHILBEN: CCAXL-1RH-H	120V/1ø/2W	LED EXIT SIGN WITH (2) HALOGEN EMERGENCY LAMPS
R2 EXIST	(1) LED	CEILING-MOUNT LED EXIT	CEILING	MCPHILBEN: CXXL-3-RN	120V/1ø/2W	
R3 EXIST	(1) LED	WALL-MOUNT LED EXIT	WALL	MCPHILBEN: CXXL-3-RN	120V/1ø/2W	
S EXIST	(1) 500 WATT, PAR64, RELAMP TO LED	SPOT LIGHT	SURFACE	LSI: 500-S	120V/1ø/2W	FIXTURE SHALL BE CANOPY MOUNTED TO BOTTOM OF STRUCTURAL BEAM
T EXIST	(1) 50 WATT, METAL HALIDE	CUPOLA LIGHT (WALL-PACK)	ROOF	DAYBRITE: WLP050MMT-LP	120V/1ø/2W	FIXTURE SHALL BE MOUNTED TO BACK SIDE OF CUPOLA SEAL ALL PENETRATIONS
V EXIST	(1) 150 WATT, METAL HALIDE	FLOOD LIGHT	ROOF	GARDCO: DFT-N5P-150MH	120V/1ø/2W	SEAL ALL PENETRATIONS PROVIDE WEATHER PROOF INSTALLATION
X EXIST	(1) 400 WATT, METAL HALIDE	POLE MOUNTED EXTERIOR LIGHT	POLE-MOUNT	EMCO: ECAI813H-400MH-208-BRP	120V/1ø/2W	POLE SHALL BE 55630-5-7-D1-BRP. PROVIDE FIXTURE W/40,000 LUMENS
Y EXIST	(2) 400 WATT, METAL HALIDE	POLE MOUNTED EXTERIOR LIGHT	POLE-MOUNT	EMCO: ECAI813H-400MH-208-BRP	120V/1ø/2W	POLE SHALL BE 55630-5-7-D2-BRP. PROVIDE FIXTURE W/40,000 LUMENS
Z EXIST	(1) 70 WATT, METAL HALIDE	DECORATIVE POLE MOUNT EXTERIOR LIGHT	POLE-MOUNT	LUMEC: 70MH-L61-6LC-RR-I-APR4-6.5-WHT	120V/1ø/2W	POLE SHALL BE 6'-6" W/LBC3 OPTIONAL BASE COVER. POLE SHALL HAVE WHITE FIN



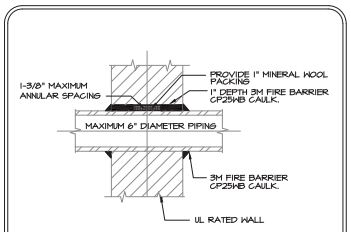
E1.6 EXISTING PANEL ONE LINE
SCALE: NO SCALE



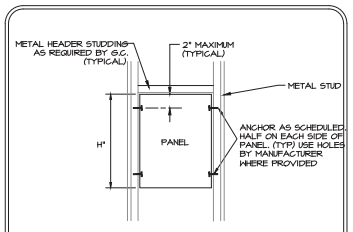
2 TYPICAL WALL/FLOOR SUPPORTED EQUIPMENT
E1.6 SCALE: NO SCALE



6 STANDBY POWER WIRING SCHEMATIC
E1.6 SCALE: NO SCALE



3 FIRE/SMOKE WALL CONDUIT PEN.
E1.6 SCALE: NO SCALE



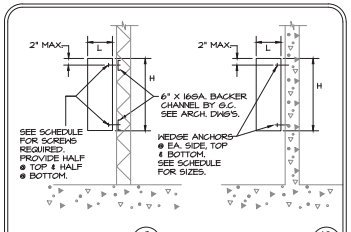
4 ANCHORING OF RECESSED PANELS
E1.6 SCALE: NO SCALE

PLAN MARK	MANUFACTURER & PRODUCT NUMBER	LAMPS QTY	LAMPS WATTS (BULB)	LAMPS FIXTURE WATTAGE	LAMPS BULB TYPE	MOUNTING LOCATION	MOUNTING TYPE	DESCRIPTION	NOTES & REMARKS
AA	LITHONIA 2BLT4 40L ADP LP835	-	34	34	LED	CEILING	DRYWALL	2'X4' LED LIGHT - VERIFY TYPE WITH OWNER	1,2,3
BB	LITHONIA 2BLT4 40L ADP LP835	-	34	34	LED	CEILING	DRYWALL	1'X4' LED LIGHT - VERIFY TYPE WITH OWNER	1,2,3
WP	LITHONIA WALL PACK	-	80	34	LED	WALL	SURFACE	VERIFY TYPE WITH OWNER	
X	COOPER CU2-LED		-	6	LED	UNIVERSAL	SURFACE	EMERGENCY EXIT SIGN WITH BATTERY BACKUP	1,2
EM	COOPER CB12	-	-	105	LED	WALL/INT	SURFACE	EMERGENCY EGRESS LIGHTING WITH DUAL HEADS, BATTERY BACKUP	1,2
X2	COOPER APCHTR	-	-	5	LED	UNIVERSAL	SURFACE	EMERGENCY EXIT LIGHTING WITH DUAL HEADS & BATTERY BACKUP	1,2
X3	COOPER APCHTR	-	-	5	LED	UNIVERSAL	SURFACE	EMERGENCY EXIT LIGHTING WITH DUAL HEADS & BATTERY BACKUP & EXTERIOR LED	1,2

MANUFACTURER & PRODUCT NUMBER
1. CONTRACTOR TO VERIFY ALL FIXTURES AND LOADS. ADJUST CIRCUITING AS REQUIRED.
2. ALL LIGHTS ARE 120V, SINGLE PHASE
3. COORDINATE WITH CEILING TYPE FOR EXACT LAMP MOUNTING TYPE
4. WATERPROOF EXTERIOR FIXTURES

NOTE: CONTRACTOR MAY PROVIDE APPROVED EQUAL

LIGHTING FIXTURE SCHEDULE



5 SURF. MOUNT WALL SUP. EQUIP.
E1.6 SCALE: NO SCALE

SEAL:

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PROFESSIONAL ENGINEER #: NO-25069
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CRYSTAL CITY, MO 63019
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Dynamic ENGINEERED SYSTEMS, INC.
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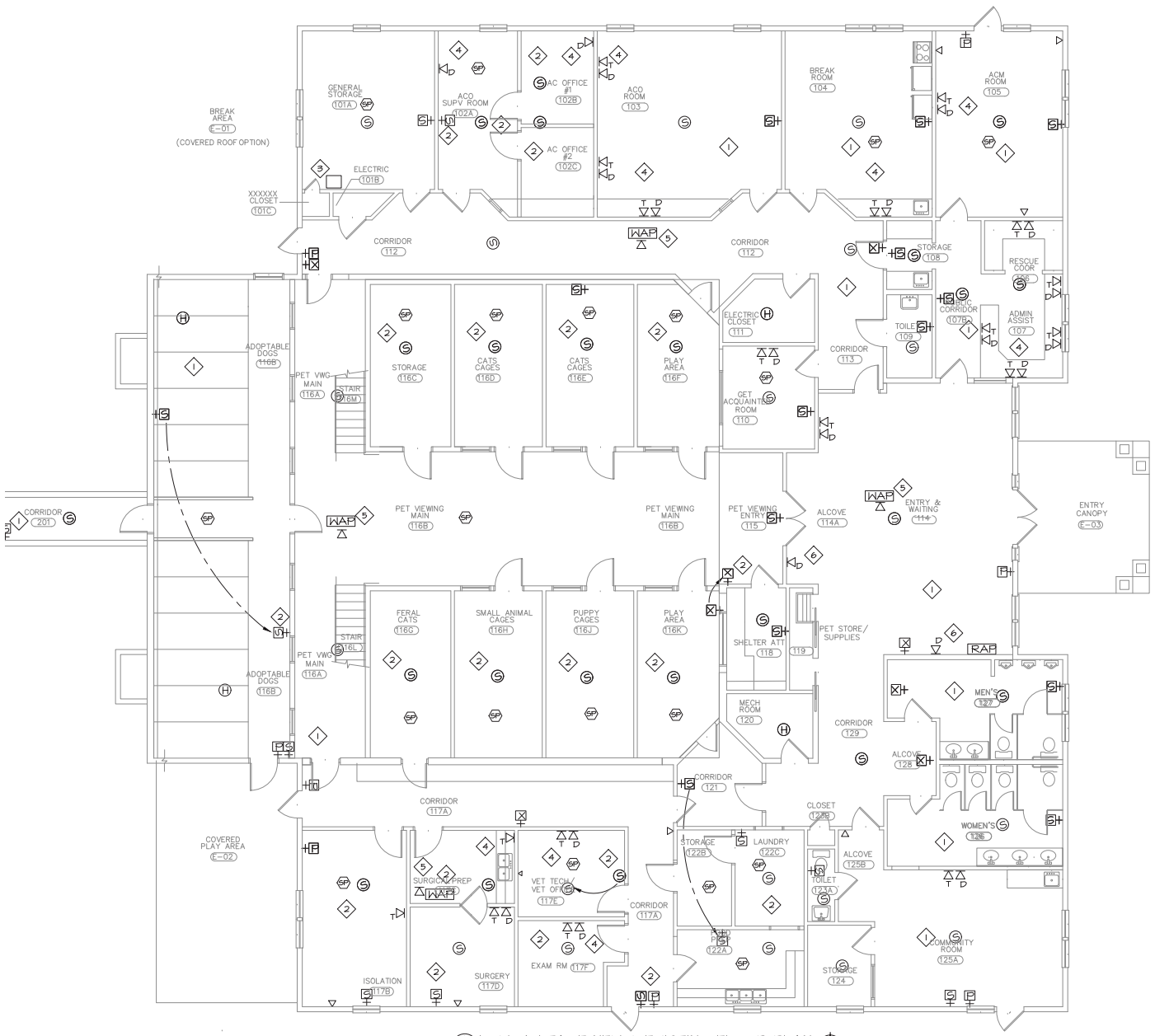

E1.7 LOW VOLTAGE NEW & EXISTING FLOOR PLAN
SCALE: 3/16"=1'-0"

GENERAL NOTES

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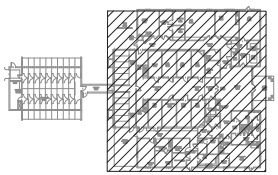
3. ELECTRICAL CONTRACTOR SHALL VERIFY CEILING TYPES WITH ARCHITECTURAL DRAWINGS.
4. ALL LOW VOLTAGE TO BE ROUTED IN CABLE SUPPORT OR IN WALL. SUPPORT PER MANUFACTURERS RECOMMENDATIONS.
5. ALL LOW VOLTAGE TO BE CAT 6A WITH CAT 6A TERMINATION. ALL PRODUCT TO PANDUIT. ALL TERMINATION TO BE BE VERIFIED AND LABELED.

KEYED NOTES

1. EXISTING DEVICES TO REMAIN.
2. RELOCATED OR NEW DEVICES TO ACCOMMODATE NEW FLOOR PLAN.
3. PROVIDE PANDUIT PATCH PANEL. COORDINATE WITH OWNER FOR FINAL LOCATION. PANDUIT (2) 48 PORT PATCH PANELS.
4. ALL LOW VOLTAGE TO BE CAT 6A COMPLIANT. COORDINATE FINAL LOCATION WITH OWNER. MOUNT 12" AFF UNLESS DIRECTED OTHERWISE.
5. DATA PORT IN CEILING FOR WIRELESS ACCESS POINT.
6.

FIRE ALARM SYSTEM LEGEND	
SYMBOL	DESCRIPTION
	WALL MOUNTED PULL STATION
	WALL MOUNTED HORN
	WALL MOUNTED STROBE
	WALL MOUNTED COMBINATION HORN/STROBE
	CEILING MOUNTED SMOKE DETECTOR
	CEILING MOUNTED HEAT DETECTOR
	MAGNETIC DOOR HOLDER
FACP	FIRE ALARM CONTROL PANEL
FARP	FIRE ALARM REMOTE ANNUNCIATOR PANEL

XXX	CABLE	RG6
D	DATA	CAT6A
T	TELEPHONE	CAT6A
SP	SPEAKER (INTERCOM)	18/2 TWISTED&SHIELDED



KEY PLAN

SEAL:

MISSOURI CERTIFICATE OF AUTHORITY #: E-2011001315
PROFESSIONAL ENGINEER #: MO-25069

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BACON COMMERCIAL DESIGN LLC
PO BOX 605
CRYSTAL CITY, MO 63019
636.933.0007

Dynamic ENGINEERED SYSTEMS, INC.

MEP MODIFICATIONS FOR:
JEFFERSON COUNTY MISSOURI
ANIMAL RESOURCE CENTER
4848 STATE ROUTE 30
HOUSE SPRINGS, MO

REVISIONS:

TAG	DESCRIPTION
0	FOR BIDDING & PERMIT REVIEW 04/15/20 FOR CONSTRUCTION WITH APPROVED PERMITS

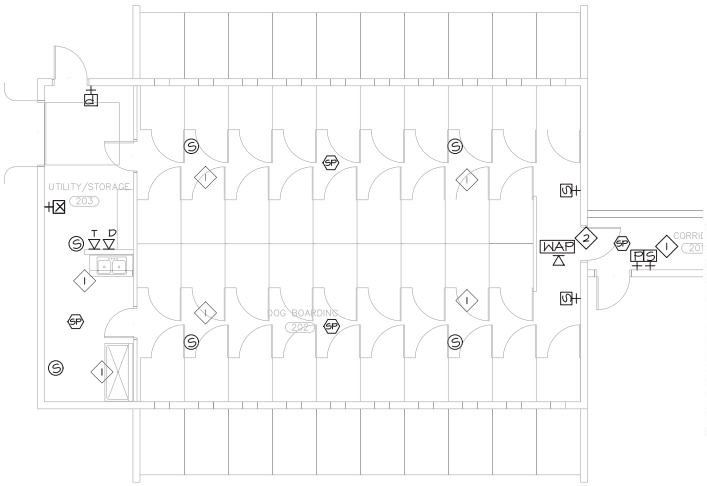
PROJECT #:	BAC-19-243
DATE:	01/06/20
DRAWN BY:	BM
DESIGNED BY:	POB
CHECKED BY:	POB
SHEET:	E1.7

GENERAL NOTES

1. BUILDING IS A NEW ADDITION. COORDINATE WITH ARCHITECTURAL PRINTS AND GC FOR NEW FLOOR PLAN. COORDINATE WITH EXISTING FCP PANEL FOR TIE IN OF NEW DEVICES.
2. DRAWINGS ARE DIAGRAMMATIC IN NATURE. ALL WALL LOCATIONS SHALL BE REFERENCED FOR DIMENSIONS FROM ARCHITECTURAL PRINTS.
3. COORDINATE SHUTDOWN OF ALARM SYSTEM WITH GC AND AHJ PRIOR TO ALL WORK

KEYED NOTES

1. NEW DEVICES COORDINATE WITH GC FOR CEILING MOUNTING TYPE.
2. DATA PORT IN CEILING FOR WIRELESS ACCESS POINT.



FIRE ALARM SYSTEM LEGEND	
SYMBOL	DESCRIPTION
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	WALL MOUNTED HORN
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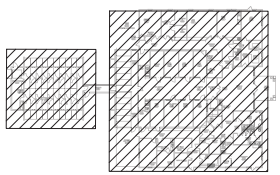
	WALL MOUNTED COMBINATION HORN/STROBE
	CEILING MOUNTED SMOKE DETECTOR
	CEILING MOUNTED HEAT DETECTOR
	MAGNETIC DOOR HOLDER
FACP	FIRE ALARM CONTROL PANEL
RAP	FIRE ALARM REMOTE ANNUNCIATOR PANEL

FA	CABLE	RG6
D	DATA	CAT6A
T	TELEPHONE	CAT6A
SP	SPEAKER (INTERCOM)	18/2 TWISTED & SHIELDED

1 LOW VOLTAGE NEW ADDITION FLOOR PLAN
E1.8 SCALE: 3/16"=1'-0"



KEY PLAN

SEAL:

MISSOURI CERTIFICATE OF AUTHORITY #: E-2011001315
PROFESSIONAL ENGINEER #: MO-25069

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4848 STATE ROUTE 30
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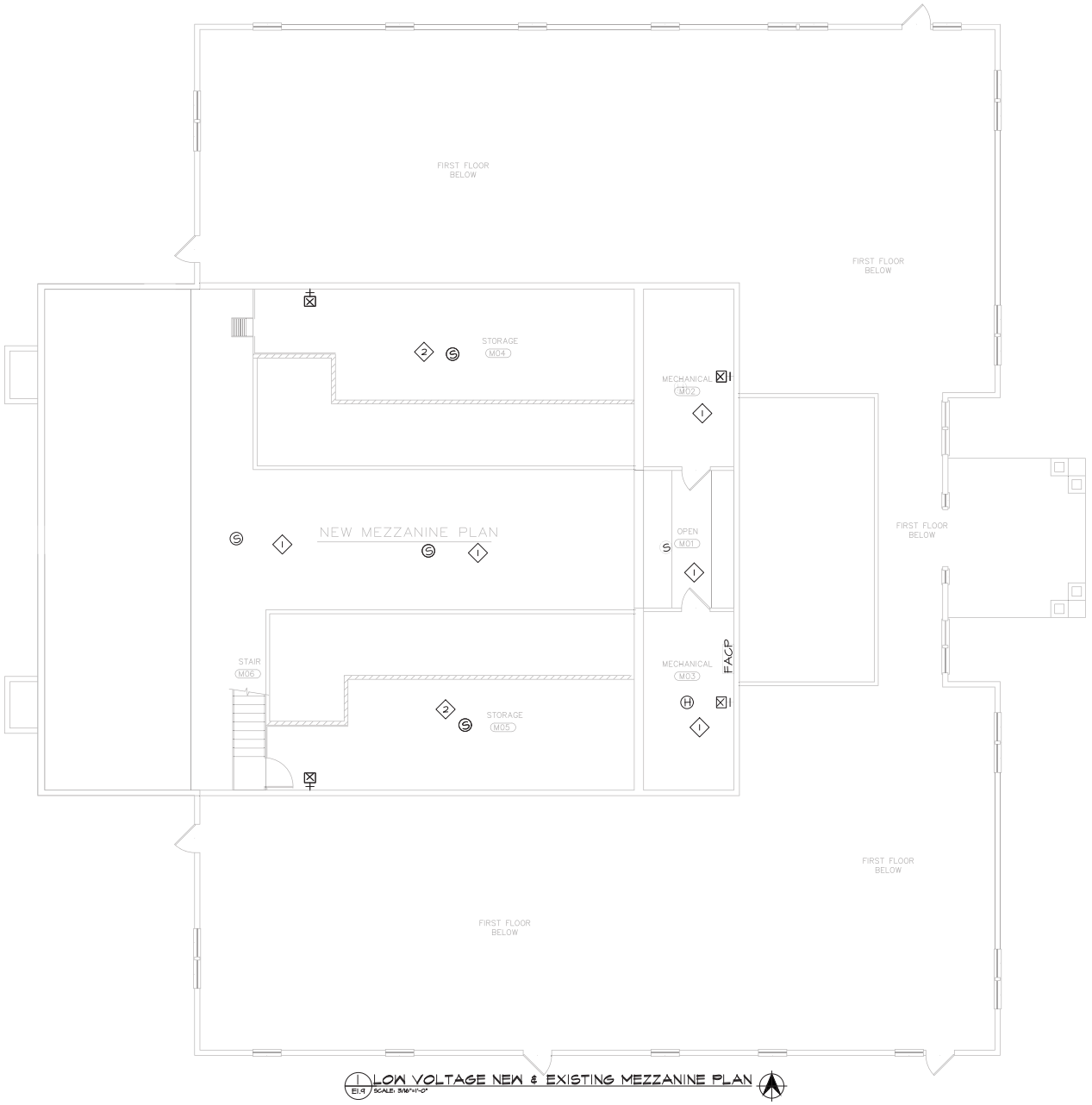
SHEET:	E1.8



1 LOW VOLTAGE NEW & EXISTING MEZZANINE PLAN
E1.1 SCALE: 3/16"=1'-0"

GENERAL NOTES

1. BUILDING IS EXISTING. COORDINATE WITH ARCHITECTURAL PRINTS AND GC FOR ALL DEMO OF EXISTING FIRE ALARM DEVICES AND REWORK FOR NEW FLOOR PLAN. COORDINATE WITH EXISTING FCP PANEL FOR TIE IN OF NEW DEVICES.
2. DRAWINGS ARE DIAGRAMMATIC IN NATURE. ALL WALL LOCATIONS SHALL BE REFERENCED FOR DIMENSIONS FROM ARCHITECTURAL PRINTS.
3. COORDINATE SHUTDOWN OF ALARM SYSTEM WITH GC AND AHJ PRIOR TO ALL WORK

KEYED NOTES

1. EXISTING DEVICES TO REMAIN.
2. RELOCATED OR NEW DEVICES TO ACCOMMODATE NEW FLOOR PLAN.

FIRE ALARM SYSTEM LEGEND

SYMBOL	DESCRIPTION
	WALL MOUNTED PULL STATION
	WALL MOUNTED HORN
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	WALL MOUNTED COMBINATION HORN/STROBE
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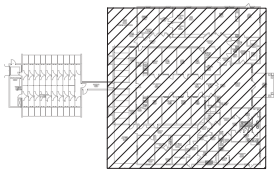

KEY PLAN

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SHEET:	E1.9

GENERAL NOTES

1. THE STRUCTURAL DOCUMENT (DRAWINGS & SPECIFICATIONS) - MUST NOT BE USED WITHOUT THE CONSTRUCTION DOCUMENT OF OTHER DISCIPLINES. COORDINATION BETWEEN STRUCTURAL DOCUMENT AND OTHER DISCIPLINE'S DOCUMENT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND THE SUBCONTRACTOR RESPONSIBLE FOR THE WORK.
2. EXISTING CONDITIONS SHOWN ON THE STRUCTURAL DOCUMENT ARE CONCEPTUAL & MUST BE VERIFIED IN THE FIELD BY GENERAL CONTRACTOR PRIOR TO DETAILING, FABRICATION, & CONSTRUCTION OF RELATED WORK.
3. ALL ITEMS REQUIRED BY OTHER DISCIPLINE'S WORK & IMPACTING THE STRUCTURAL WORK SUCH AS CASTING OF ANCHORS, SLEEVES, CONDUITS, OPENINGS, SUPPORTS FOR & BRACING FOR NON-STRUCTURAL COMPONENT SHALL BE IDENTIFIED BY SUBCONTRACTORS RESPONSIBLE FOR SUCH WORK & SUBMITTED WITH DETAILS FOR STRUCTURAL ENGINEER'S APPROVAL.
4. THE SEOR IS NOT RESPONSIBLE FOR MEANS, METHODS, AND SEQUENCE OF WORK. ALL TEMPORARY BRACING, SHORING, COMPLIANCE WITH OSHA REGULATIONS & SOILS REPORT AND GENERAL STABILITY OF INDIVIDUAL STRUCTURAL COMPONENT DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
5. WHERE SPECIFIC DETAILS ARE NOT IDENTIFIED ON THE STRUCTURAL PLANS, REFER TO TYPICAL DETAILS AND UTILIZE INDUSTRY STANDARD PRACTICE AS IDENTIFIED IN SPECIFIED CODES, REGULATIONS, AND STANDARDS.

DESIGN CRITERIA
BUILDING CODE: IBC 2015 - ASCE 7-10

LIVE LOADS
ROOF 0 TO 200 S.F.: 20 PSF
200 TO 600 S.F.: 24-0.02 AREA BUT NOT LESS THAN 12 PSF
OVER 600 S.F.: 12 PSF

FLOOR 100 PSF
STAIRS & EXITWAYS 100 PSF
MEZZANINE (MECH.) 60 PSF
PARTITIONS 15 PSF

DEAD LOADS
FLOOR 15 PSF
ROOF 15 PSF

ROOF SNOW LOADS
DESIGN ROOF SNOW LOAD 20 PSF
FLAT ROOF SNOW LOAD, Pf 20 PSF
SNOW EXPOSURE FACTOR, Ce 1.00
IMPORTANCE FACTOR, i 1.00
THERMAL FACTOR, Ct 1.00
GROUND SNOW LOAD, Pg 20 PSF
RAIN ON SNOW SURCHARGE 0 PSF
SLOPED ROOF FACTOR, Cs 1.00

WIND DESIGN DATA
BASIC WIND SPEED 115 MPH
MEAN ROOF HT (h) 28 FEET
BUILDING CATEGORY II
IMPORTANCE FACTOR 1.00
EXPOSURE CATEGORY B
ENCLOSURE CLASSIF. ENCLOSED BUILDING
INTERNAL PRESSURE COEF. +/- 0.18
DIRECTIONALITY (Kd) 0.85

EARTHQUAKE DESIGN DATA
OCCUPANCY CATEGORY II
IMPORTANCE FACTOR, I 1.00
MAPPED SPECTRAL RESPONSE, Ss 0.42%g
ACCELERATIONS, S1 16.60%g
SITE CLASS C
SPECTRAL RESPONSE COEF., Sds 0.278
Sd1 0.110
SEISMIC DESIGN CATEGORY B

AREA B ADDITION:
BASIC STRUCTURAL SYSTEM BEARING WALL
SEISMIC RESISTING SYSTEM ORDINARY PLAIN MASONRY SHEAR WALLS
DESIGN BASE SHEAR, V 0.043W
SEISMIC RESPONSE COEF., Cs 0.043
RESPONSE MODIFICATION FACTOR, R 6.5
ANALYSIS PROCEDURE EQUIVALENT LATERAL-FORCE ANALYSIS

MEZZANINE:
BASIC STRUCTURAL SYSTEM BEARING WALL
SEISMIC RESISTING SYSTEM LIGHT FRAME WALL SYSTEM USING STRAP BRACING
DESIGN BASE SHEAR, V 0.043W
SEISMIC RESPONSE COEF., Cs 0.043
RESPONSE MODIFICATION FACTOR, R 6.5
ANALYSIS PROCEDURE EQUIVALENT LATERAL-FORCE ANALYSIS

WOOD FRAMING (ROUGH CARPENTRY, WOOD RPODUCTS AND WOOD TRUSSES)

A. DESIGN CODES:
1. NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS), LATEST ADOPTION.
2. INSTALL ROUGH CARPENTRY WORK TO COMPLY WITH AMERICAN INSTITUTE OF TIMBER CONSTRUCTION (AITC) TIMBER CONSTRUCTION (TC) MANUAL, LATEST ADOPTION AND RECOMMENDATIONS OF THE PRODUCT MAUFACTURER.

B. MATERIAL STRENGTHS:
1. ALL WOOD STICK FRAMING SHALL BE DOUGLAS FIR-LARCH, NO. 2 GRADE (GRADED UNDER WWPA RULES) OR BETTER.
2. WOOD STUD WALL FRAMING SHALL BE SPRUCE-PINE-FIR, NO. 1 GRADE (GRADED UNDER NLGA RULES), DOUGLAS FIR-LARCH, NO. 2 GRADE (GRADED UNDER WWPA RULES), HEM-FIR, NO. 2 GRADE (GRADED UNDER WWPA RULES) OR BETTER.
3. ALL WALL TOP PLATES BELOW TOP FLOOR OF MULTI-STORY STRUCTURE WITHOUT IN-LINE FRAMING (WITHIN 3") SHALL BE DOUGLAS FIR-LARCH OR SOUTHERN YELLOW PINE, NO. 3 GRADE OR BETTER.
4. LUMBER FOR MISCELLANEOUS USES MAY BE "STANDARD" GRADE LIGHT-FRAMING-SIZE LUMBER OF ANY SPECIES FOR SUPPORT OF OTHER CONSTRUCTION INCLUDING ROOFTOP EQUIPMENT AND SUPPORT BASES, CANT STRIPS, BUCKS, NAILERS, BLOCKING, FURRING, GROUND, STRIPPING AND SIMILAR MEMBERS.
5. ALL WOOD STRUCTURAL PANELS SHALL BE IDENTIFIED WITH THE APPROPRIATE GRADE TRADEMARK OF THE AMERICAN PLYWOOD ASSOCIATION (APA) AND SHALL MEET THE REQUIREMENTS OF PRODUCT STANDARD PS-1. UNLESS NOTED OTHERWISE PLYWOOD SHALL BE C-DX EXPOSURE 1 WITH GRADE AND THICKNESS INDICATED ON PLANS AND NOTES.
6. PREFABRICATED WOOD I- JOISTS SHALL BE MANUFACTURED BY TRUSJOIST CORP. OR EQUAL.
7. ALL BEAMS/HEADERS/LINTELS DENOTED AS MICROLAM OR LAMINATED VENEER LUMBER (LVL), PER AITC A19.01 AND ASTM D 3737 SHALL BE MANUFACTURED BY TRUSJOIST CORP. OR EQUAL AND HAVE THE FOLLOWING PROPERTIES:
   a. ALLOWABLE BENDING STRESS 2,500 PSI
   b. ALLOWABLE SHEAR STRESS 285 PSI
   c. MODULUS OF ELASTICITY 1,900,000 PSI
8. ALL BEAMS/HEADERS/LINTELS DENOTED AS PARALLAM OR PARALLEL STRND LUMBER (PSL), PER AITC A19.01 AND ASTM D 3737 SHALL BE MANUFACTURED BY TRUSJOIST CORP. OR EQUAL AND HAVE THE FOLLOWING PROPERTIES:
   a. ALLOWABLE BENDING STRESS 2,900 PSI
   b. ALLOWABLE SHEAR STRESS 290 PSI
   c. MODULUS OF ELASTICITY 2,000,000 PSI
9. ENGINEERED LUMBER RIM BOARDS SHALL BE 1 1/4" TIMBER BOARD LSL AS MANUFACTURED BY TRUSJOIST OR EQUAL.
10. FASTENERS:
   a. NAILS, WIRE BRADS AND STAPLES: ASTM F547
   b. POWER DRIVEN FASTENERS: NATIONAL EVALUATION REPORT NER-272
   c. WOOD SCREWS: ANSI B18.6.1
   d. LAG BOLTS: ANSI B18.2.1
   e. BOLTS: ASTM A307, GRADE A OR ASTM A36

C. WOOD TRUSS MEMBERS:
1. TRUSSES SHOWN ON PLANS ARE FOR CONFIGURATION ONLY. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH MISSOURI PROFESSIONAL ENGINEERS SEAL SHOWING ACTUAL MEMBER STRESSES AND JOINT PLATE SIZES CONFORMING TO LOADING FIGURES CONSTRUCTED BY THE TRUSS SUPPLIER. TRUSS LAYOUT/PLAN DRAWINGS SHALL BE SUBMITTED.
2. ALL WOOD TRUSS TO WOOD TRUSS (OR WOOD GIRDER) CONNECTIONS SHALL BE BY WOOD TRUSS SUPPLIER. SHOP DRAWINGS SHALL BE SUBMITTED FOR THESES CONNECTIONS, TYPICAL.
3. TEMPORARY AND PERMANENT WOOD TRUSS BRACING/BRIDGING LOCATION AND SIZE SHALL BE DESIGNED AND INDICATED BY THE TRUSS MANUFACTURER, TYP.
4. LIVE LOAD DEFLECTION DESIGN LIMITS SHALL NOT BE GREATER THAN THE FOLLOWING:
   a. ROOF TRUSSES, VERTICAL 1/360 TIMES PROJECTED SPAN.
   b. FLOOR TRUSSES, VERTICAL 1/480 TIMES SPAN LENGTH.
5. PROVIDE 1/8" OF CAMBER FOR EACH 6'-0" OF TRUSS SPAN UNO.
6. PROVIDE GAP AND SIMPSON STC CLIPS (OR OTHER ACCEPTABLE METHOD) AT NON-LOAD BEARING WALLS TO WOOD TRUSS CONNECTION TO ALLOW FOR TRUSS DEFLECTION, TYP. ATTACH FINISHES AT THESE LOCATIONS PER TRUSS MANUFACTURER'S RECOMMENDATIONS.

D. NOTES:
1. LAY STRUCTURAL PANELS WITH FACE GRAIN PERPENDICULAR TO SUPPORTING MEMBERS AND STAGGER END JOINTS 4'-0".
2. INSTALL PANELS CONTINUOUSLY OVER TWO OR MORE SPANS.
3. PANEL CLIPS AT 24"O.C. (OR ONE PER SPAN MIN.) SHALL BE USED FOR ROOF DECKING.
4. FASTEN PANELS TO SUPPORTS WITH 8d NAILS UNO (10d FOR 3/4" SHEATHING). NAIL SPACING SHALL BE 6" O.C. FIELD (INTERMEDIATE SUPPORTS) UNO.
5. 1/8" SPACE SHALL BE ALLOWED AT ALL PANEL ENDS AND EDGES.
6. ROOF DECKING SHALL BE 19/32" APA RATED SHEATHING WITH 40/20 SPAN RATING UNO.
7. FLOOR DECKING SHALL BE 3/4" T&G, APA RATED SHEATHING WITH 48/24 SPAN RATING UNO.
   a. FLOOR DECKING SHALL BE GLUED AT THE TOP FLOOR JOISTS AND AT T&G JOINTS IN ACCORDANCE WITH APA RECOMMENDATIONS AND THE GLUE MFR. USE ONLY ADHESIVES CONFORMING TO PERFORMANCE SPECIFICATION AFG-01. IF OSB PANELS WITH SEALED SURFACES AND EDGES ARE TO BE USED, USE ONLY SOLVENT-BASED LGUES. COMPLETE ALL NAILING OF EACH PANEL BELFORE GLUE SETS.
8. EXTERIOR WALLS SHEATHING SHALL BE 7/16" OSB APA RATED SHEATHING WITH A 24/0 S(AN RATING UNO.
9. ALL WOOD FRAMING MEMBERS REFERENCED ARE NOMINAL SIZES, DRESSED S4S. PROVIDE ACTUAL SIZES, AS REQUIRED BY PS20. RPOVIDE SEASONED LUMBER S-DRY OR KD WITH 19 PERCENT MAXIMUM MOISTURE CONTENT AT THE TIME OF DRESSING.
10. ALL BEAMS, HEADERS, LINTELS AND COLUMNS SHALL BE CONNECTED WITH APPROPRIATE METAL STANDARDS OF SIMPSON STRONG-TIE. ATTACH ANCHORS TO WOOD FRAMING IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
11. MISCELLANEOUS FASTENER CONNECTIONS SHALL BE IN ACCORDANCE WITH THE NAILING SCHEDULE OF THE APPROPRIATE BUILDING CODE. WHERE ROUGH CARPENTRY IS EXPOSED TO WEATHER, IN GROUND CONTACT, OR IN AREAS OF HIGH RELATIVE HUMIDITY, PROVIDE HOT-DIP-ZINC COATED FASTENERS PER ASTM A153 OR AISI TYPE 304 STAINLESS STEEL FASTENERS.
12. ENDS OF STICK BUILT FRAMING MEMBERS SHALL BE HELD IN POSITION BY FULL DEPTH BLOCKING OR BY METAL JOIST HANGERS UNLESS NOTED OTHERWISE.
13. BEAMS/HEADERS/LINTELS REQG BEARING STUD(S) AND FULL HEIGHT STUD(S) AT ALL EXTERIOR/INTERIOR OPENINGS:
   a. THE QUANTITY OF STUDS (I.S., FULL HEIGHT, KING OR JAMB STUDS AT HEADERS) AND JOISTS DISPLACED OR CUT FOR OPENING SHALL BE PLACED HALF ON EACH SIDE OF OPENING.
   b. ALL DIMENSION LUMBER BEAMS/HEADERS/LINTELS SHALL BE SUPPORTED BY A MINIMUM OF ONE BEARING STUD AND TWO FULL HEIGHT STUDS AT ALL EXTERIOR/INTERIOR OPENINGS.
   c. ALL DIMENSION BEAMS AND GIRDER TRUSSES SHALL BE SUPPORTED BY A MINIMUM OF TWO STUDS AT EACH BEARING LOCATION, FULL-HEIGHT FROM FOUNDATION TO BEARING ELEVATION UNLESS NOTES. PROVIDE BEARING BLOCKING AT FLOOR LEVELS AS REQUIRED TO MAINTAIN SUPPORT TO FOUNDATION.
14. STUDS SHALL BE CAPED WITH DOUBLE TOP PLATES UNO. STAGGER JOINTS AND PROVIDE OVERLAPS AT CORNERS AND INTERSECTIONS OF BEARING WALLS. USE TRIPLE TOP PLATES AT SECOND LEVEL IF STUDS ABOVE SECOND LEVEL DO NOT ALIGN (WITHIN 3 INCHES) WITH FRAMING (CL JOISTS AND TRUSSES) /STUDS BELOW SECOND LEVEL. USE FOUR TOP PLATES AT FIRST LEVEL IF STUDS ABOVE FIRST LEVEL DO NOT ALIGN (WITHIN 3 INCHES) WITH FRAMING (CL JOISTS AND TRUSSES).
15. PROVIDE A SINGLE SILL PLATE AT FOUNDATION LEVEL OF ALL STUD WALLS UNO. SILL PLATES SHALL BE PRESSURE PRESERVATIVE TREATED AND ANCHORED TO FOUNDATION PER THE FOLLOWING UNO:
   a. NON-LOAD BEARING WALLS: HILTI DN62P8 PINS AT 24" O.C.
   b. LOAD BEARING/EXTERIOR WALLS: SEE PLANS.
   c. SHEAR WALLS: SEE PLANS.
16. ALL MULTIPLE-PLY MICROLAM MEMBERS SHALL BE INTERCONNECTED PER MANUFACTURER INSTRUCTIONS FOR SIDE-LOADED BEAMS.
17. PRESERVATIVE PRESSURE TREAT LUMBER AND PLYWOOD WITH WATER-BORNE PRESERVATIVES TO COMPLY WITH AWPA C2 AND C9 RESPECTIVELY, AND WITH REQUIREMENTS INDICATED BELOW.
   a. PRESSURE TREAT ABOVE-GROUND ITEMS WITH WATER-BORNE PRESERVATIVE TO A MINIMUM RETENTION OF 0.25 PCF, FOR INTERIOR USES, AFTER TREATMENT, KILN-DRY LUMBER AND PLYWOOD TO A MAXIMUM MOISTURE CONTENT, RESPECTIVELY, OF 18 PERCENT AND 15 PERCENT, TREAT INDICATED ITEMS AND THE FOLLOWING:
      1. WOOD CANTS, NAILERS, CURBS, EQUIPMENT, SUPPORT BASES, BLOCKING STRIPPING AND SIMILAR MEMBERS IN CONNECTION WITH ROOFING, FLASHING, VAPOR BARRIERS AND WATERPROOFING.
      2. WOOD SILLS, SLEEPERS, BLOCKING, FURRING, STRIPPING AND SIMILAR CONCEALED MEMBERS IN CONTACT WITH MASINRY OR CONCRETE.
   b. COMPLETE FABRICATION OF TREATED ITEMS PRIOR TO TREATMENT, WHERE POSSIBLE. IF CUT AFTER TREATMENT, COAT CUT SURFACES TO COMPLY WITH AWPA M4. INSPECT EACH PIECE OF LUMBER OR PLYWOOD AFTER FRYING AND DISCARD DAMAGED OR DEFECTIVE PIECES.

CONCRETE:

1. CONCRETE SHALL CONFORM WITH THE REQUIREMENTS SET FORTH IN A.C.I. 301 AND SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH AND DENSITY, IN ACCORDANCE WITH THE FOLLOWING:

INTENDED USE	28-DAY STRENGTH Fc (KSI)	CONCRETE DENSITY	MAX. W/C (INCLUDING FLY ASH)	MIN. CEMENT MATL. (#/CY INCLUDING FLY ASH)	MAXIMUM AGGREGATE (IN)	SLUMP LIMITS (IN)(+0"-2")	TOTAL AIR LIMITS (%0) (B)	REQUIRED ADMIXTURES (C)
DRILLED PIERS	4	145	0.48	564	1	7	6	AE
FOOTINGS	4	145	0.48	564	1	4	-	-
GRADE BEAMS, TIE BEAMS AND BASEMENT WALLS	4	145	0.48	564	3/4	4	-	-
COLUMNS	5	145	0.48	611	3/4	4	-	-
STRUCTURAL SLABS AND BEAMS	4	145	0.48	564	3/4	4	N	-
CONCRETE EXPOSED TO DEICERS	4	145	0.40	564	3/4	4	6	AE, WR
SLABS ON METAL DECK	3.5	110	0.50	541	3/4	5	-	-
INTERIOR TOPPING SLABS	3.5	145	0.50	541	3/4	4	-	-
INTERIOR SLAB ON GRADE	4	145	0.50	564	1	4	N	-
ALL CONCRETE NOT OTHERWISE SPECIFIED	4	145	0.40	564	3/4	4	6	-

A. FOR MAXIMUM COARSE AGGREGATE SIZE INDICATED, USE THE FOLLOWING AGGREGATE SIZE NUMBERS PER A.S.T.M.
   C33: 3/8" - #8 AGGREGATE
   ¾" - #67 AGGREGATE
   1" - #57 AGGREGATE
   1 ½" - #467 AGGREGATE
B. TOTAL AIR CONTENT LIMITS INCLUDE BOTH ENTRAINED AND ENTRAPPED AIR +/- 1 ½%. "N" IN COLUMN INDICATES ADDITION OF ENTRAINED AIR NOT PERMITTED.
C. ABBREVIATIONS FOR REQUIRED ADMIXTURES AS FOLLOWS:
   AE – AIR-ENTRAINED ADMIXTURE
   WR – WATER REDUCING ADMIXTURE
D. MAXIMUM SHRINKAGE FOR SLAB ON GRADE SHALL BE LIMITED TO ¼" PER 100 FOOT.

2. REINFORCING SHALL CONFORM TO A.S.T.M. A615, GR. 60, INCLUDING TIES AND STIRRUPS. BARS REQUIRING WELDING OR FIELD BENDING SHALL BE A.S.T.M. A706, GRADE 60.
3. WELDED WIRE FABRIC SHALL CONFORM TO A.S.T.M. A185.
4. LAP SPLICES SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE, UNLESS NOTED OTHERWISE. WHERE CLASSES ARE NOT CALLED OUT ON DRAWING, USE CLASS "B" SPLICES.
   SPLICES f'c = 4000 P.S.I., Fy = 60,000 P.S.I.

STANDARD TENSION LAP SPLICE, GRADE 60
CLASS A, AB, LAP SPLICE LENGTH (INCHES)

		f'c = 3,000 P.S.I.				f'c = 4,000 P.S.I.				f'c = 5,000 P.S.I			
BAR SIZE	CLASS	A		B		A		B		A		B	
	CASE	1	2	1	2	1	2	1	2	1	2	1	2
#3	.	16	16	16	16	16	16	16	16	16	16	16	16
#4	.	16	16	16	16	16	16	16	16	16	16	16	16
#5	.	16	16	16	16	16	16	16	16	16	16	16	16
#6	.	16	16	16	16	16	16	16	16	16	16	16	16
#7	.	16	16	16	16	16	16	16	16	16	16	16	16
#8	.	16	16	16	16	16	16	16	16	16	16	16	16
#9	.	16	16	16	16	16	16	16	16	16	16	16	16
#10	.	16	16	16	16	16	16	16	16	16	16	16	16
#11	.	16	16	16	16	16	16	16	16	16	16	16	16

"TOP BARS" ARE DEFINED AS ANY BAR WITH MORE THAN 12" OF CONCRETE CAST BELOW THE BAR, SEE NOTE 4 IN TABLE NOTES

COMPRESSION LAP SCHEDULE
LAP LENGTH (INCHES)
f'c = 3,000 P.S.I. OR GREATER

BAR SIZE	MIN. LAP
#3	12
#4	15
#5	19
#6	22
#7	26
#8	29
#9	33
#10	37
#11	41

TABLE NOTES
1. TABLES ARE BASED A.C.I. 318. WHERE CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED IS AT LEAST 2 BAR DIAMETERS AND THE CLEAR COVER AT LEAST 1 BAR DIAMETER, USE CASE 1. USE CASE 2 FOR OTHER BAR ARRANGEMENTS.
2. ALL SPLICES TO BE CLASS "B" TENSION SPLICE UNLESS OTHERWISE NOTED.
3. SPLICE PLAIN WIRE FABRIC BY LAPPING ONE FULL MESH SPACE PLUS 2 INCHES.
4. FOR TOP BARS, MULTIPLY LENGTHS IN TABLE BY 1.3.
5. FOR EPOXY COATED REINFORCEMENT, MULTIPLY LENGTHS IN TABLE BY 1.3 FOR TOP BARS AND 1.5 FOR COVER LESS THAN 3db OR CLEAR LESS THAN 6db, MULTIPLY LENGTHS IN TABLE BY 1.2 FOR ALL OTHER EPOXY COATED REINFORCEMENT.
6. FOR LIGHT CONCRETE, MULTIPLY LENGTHS IN TABLE BY 1.3.
7. COMPRESSION DOWEL EMBEDMENT: 22 BAR DIAMETERS.

CONCRETE GENERAL NOTES:

1. ALL REINFORCING SHALL BE DETAILED, FABRICATED AND PLACED, IN ACCORDANCE WITH THE LATEST EDITION OF THE A.C.I. DETAILING MANUAL.
2. ALL REINFORCING SHALL BE SUPPORTED IN FORMS, SPACED WITH NECESSARY ACCESSORIES AND SHALL BE SECURELY WIRED TOGETHER, IN ACCORDANCE WITH C.S.R.I. "REINFORCEING BAR DETAILING", LATEST EDITION.
3. MINIMUM CONCRETE COVER, UNLESS NOTED OTHERWISE:
   UNFORMED SURFACE IN CONTACT WITH THE GROUND: 3 IN.
   FORMED SURFACES EXPOSED TO EARTH OR WEATHER:
      1 ½ IN.FOR #5 BAR OR SMALLER
      2 IN. FOR #6 BAR OR LARGER
   FORMED SURFACES NOT EXPOSED TO EARTH OR WEATHER:
      WALLS, SLABS: ¾ IN.
      BEAMS, GIRDERS AND COLUMNS (TO TIES OR STIRRUPS): 1 ½ "
4. ALL CONSTRUCTION JOINTS SHOWN ON DRAWINGS SHALL BE INCORPORATED INTO THE STRUCTURE, UNLESS THEIR ELIMINATION IS APPROVED BY THE ENGINEER. ADDITIONAL CONSTRUCTION JOINTS, REQUIRED TO FACILITATE CONSTRUCTION, SHALL BE LOCATED AT POINTS OF MINIMUM SHEAR AND SHALL BE DETAILED ON SHOP DRAWINGS WITH LOCATIONS SUBJECT TO APPROVAL BY ENGINEER. REINFORCEMENT SHALL PASS CONTINUOUSLY THROUGH THE JOINT.
5. ALL ABUTTING CONCRETE MEMBERS SHALL BE DOWELED TOGETHER, UNLESS POURED MONOLITHICALLY. DOWELS SHALL BE EQUAL IN SIZE AND SPACING TO THE REINFORCING IN THE ADJECENT MEMBER.
6. UNLESS OTHERWISE SHOWN IN THE ARCHITECTURAL DRAWINGS, PROVIDE 3.4" CHAMFERS AT ALL EDGES THAT ARE EXPOSED TO THE VIEW IN THE FINISHED STRUCTURE.
7. SEE ARCHITECTURAL DRAWINGS FOR DOOR AND WINDOW OPENINGS, DRIP SLOTS, REGLETS, MASONRY ANCHORS, PRECAST BEARING LEDGES, BRICK LEDGE ELEVATIONS AND FOR MISCELLANEOUS EMBEDDED PLATES, BOLTS, ANCHORS, ANGLES, ETC.
8. REFER TO ARCHITECTURAL DRAWINGS FOR CONCRETE FINISHES. WHERE FINISH IS NOT SPECIFIED, CONFORM TO REQUIREMENTS OF A.C.I. 301.
9. MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS SHALL BE REFERRED TO FOR DRAINS, SLEEVES, OUTLET BOXES, CONDUIT, ANCHORS, ETC. THE VARIOUS TRADES ARE RESPONSIBLE FOR PLACING THEIR ITEMS.
10. REFER TO MECHANICAL DRAWINGS FOR HOUSEKEEPING PADS AND INERTIA BASES AT MECHANICAL EQUIPMENT.
11. PROVIDE CONCRETE EQUIPMENT PADS, INERTIA BASES AND CURBS AS NOTED ELSEWHERE IN CONTRACT DOCUMENTS. UNLESS NOTED, DOWEL PADS WITH HOOKED #4 x 0'-6" PROJECTING 3" FROM CONCRETE BELOW AT 18" O.C. EACH WAY. REINFORCE PADS WITH #4@18 EASH WAY, TOP AND BOTTOM, UNLESS OTHERWISE REQUIRED BY EQUIPMENT ANCHORAGE DESIGN.
12. REFER TO MECHANICFOAL DRAWINGS FOR UNDER FLOOR AND PERIMETER FOUNDATION DRAINS.
13. BASE PLATES, ANCHOR BOLTS, SUPPORT ANGLES, ETC., BELOW GRADE SHALL BE COVERED WITH A MINIMUM OF 3" CONCRETE.
14. PROVIDE CONTINUOUS WATERSTOP AT HORIZONTAL AND VERTICAL JOINTS BELOW GRADE.
15. SHORING OF COMPOSITE BEAMS AND GIRDERS IS THE RESPONSIBILITY OF THE CONCRETE CONTRACTOR. SEE COMPOSITE BEAM AND DECK NOTES FOR SHORING REQUIREMENTS.
16. FILL SLABS INDICATED ON THE STRUCTURAL DRAWINGS SHALL BE REINFORCED WITH 6x6-WI.4XWI.4 W.W.F., UNLESS NOTED OTHERWISE. SEE ARCHITECTURAL DRAWINGS FOR PLAN DIMENSIONS, THICKNESSES, SLOPES TO DRAIN, ETC.
17. WHERE REINFORCING IS NOT INDICATED OR DEFINED, INCLUDE FOR BID PURPOSES ONLY:
   A, WALLS: #5 EASH WAY EACH FACE. SPACING IN INCHES = 140 / (WALL THICKNESS IN INCHES) BUT NOT OVER 18" O.C.
   B. BEAMS: 1-#9 CONTINUOUS TOP AND BOTTOM FOR EACH 100 SQUARE INCHES OF BEAM CROSS SECTIONAL AREA AND #4 STIRRUPS SPACED AT ¼ OF BEAM DEPTH FULL LENGTH OF BEAM.
   C. COLUMNS: 1-#9 VERTICAL PER 50 SQUARE INCHES OF CROSS SECTIONAL AREA AND #3 TIES @ 9" O.C.
   D. SLABS: #5 EACH WAY TOP AND BOTTOM. SPACING IN INCHES = 100/(SLAB THICKNESS IN INCHES) BUT NOT OVER 18" O.C.
   ON SHOP DRAWINGS, INDICATE ABOVE REINFORCING AS "PER GENERAL NOTES". SUCH REINFORCING MAY BE REVISED OR RELOCATED BY STRUCTURAL ENGINEER DURING SHOP DRAWING REVIEW.
18. MASONRY DOWELS: PROVIDE, PLACE, AND SPACE TO MATCH MASONRY REINFORCING.
19. PROVIDE STANDARD HOOKS ON BARS TERMINATING AT A CONCRETE FACE UNLESS NOTED (E.G.: EDGES OF OPENINGS, SLAB EDGES, EXPANSION JOINTS, ENDS OF BEAMS, AND AT: TOP, BOTTOM AND ENDS OF WALLS, ETC.)
20. PROVIDE 2-#5 (MINIMUM) @ EACH SIDE OF OPENING. EXTEND 2'-0" BEYOND OPENINGS.

STRUCTURAL DRAWING LIST

S1.0 STRUCTURAL GENERAL NOTES
S2.1 STANDARD DETAILS
S3.0 FOUNDATION DEMOLITION PLAN
S3.1 FOUNDATION & SLAB PLAN - AREA A
S3.2 FOUNDATION & SLAB PLAN - AREA B
S3.3 MEZZANINE PLANE - AREA A
S3.4 ROOF FRAMING PLAN - AREA B
S4.1 SECTIONS AND DETAILS
S4.2 FRAMING SECTIONS

STRUCTURAL GENERAL NOTES

Date	Revisions
4/15/2020	ISSUED FOR BID

OWNER:
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL:
DATE:
DAVID L. VONARX E-26647

CIVIL ENGINEER
VonArx Engineering
10785 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
dvonarx@vonarxengineering.com
CERTIFICATE OF AUTHORITY 0975
OFFICE: (636) 797-8425
CELL: (314) 952-5038

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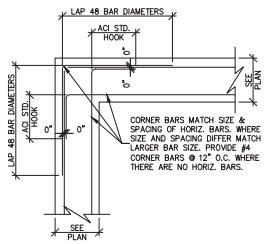
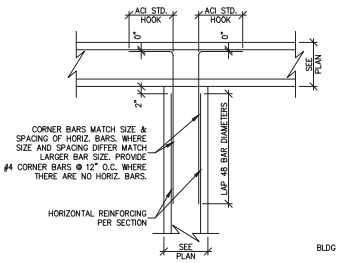
4848 State Rte. 30
House Springs, Missouri 63051

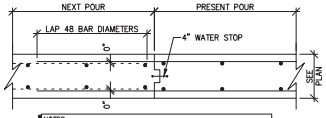
ISSUE DATE 4/15/2020
SCALE
Job Number 15169
Sheet Number S1.0



TYPICAL WALL / GRADE BEAM / FOOTING
CORNER REINFORCING DETAIL
N.T.S.

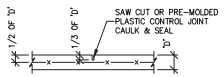


TYPICAL WALL / GRADE BEAM / FOOTING
INTERSECTION REINFORCING DETAIL
N.T.S.



NOTES:
FOR REINFORCING SIZE AND SPACING SEE FOUNDATION SECTIONS.
FOUNDATION WALLS
LOCATE POUR JOINTS AT A MAXIMUM SPACING OF 100'-0"
RETAINING WALLS
LOCATE POUR JOINTS AT A MAXIMUM SPACING OF 25'-0"
LOCATE EXPANSION JOINTS AT A MAXIMUM SPACING OF 50'-0" O.C. AND CONTROL JOINTS AT A MAXIMUM SPACING OF 50'-0" ALTERNATE AT 25'-0" O.C. TYP. U.N.O.

TYPICAL WALL POUR JOINT DETAIL
N.T.S.



TYPICAL CONTROL JOINT DETAIL
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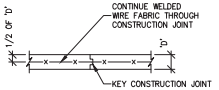

TYPICAL CONSTRUCTION JOINT DETAIL
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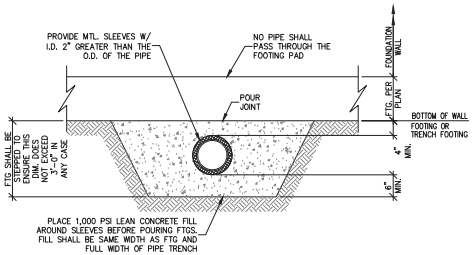
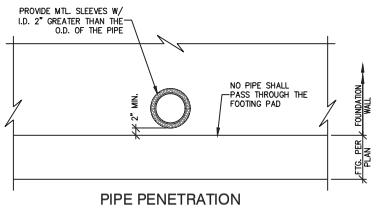
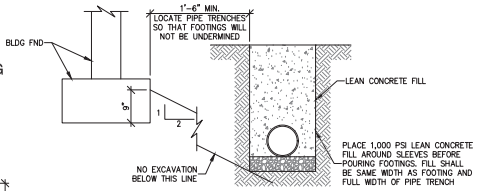


PIPE TRENCH PERPENDICULAR TO FOUNDATION DETAIL
N.T.S.



PIPE PENETRATION
THROUGH FOUNDATION WALL DETAIL
N.T.S.



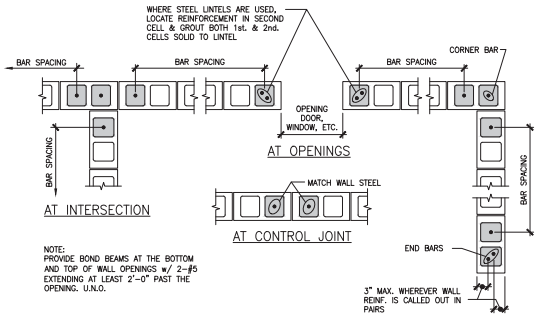
PIPE TRENCH PARALLEL TO FOUNDATION DETAIL
N.T.S.

LINTEL SCHEDULE

FOR LINTELS NOT SHOWN IN THE DOOR OR WINDOW SCHEDULE OR ON THE ARCH. DRAWINGS, USE THE ANGLE SIZE SHOWN IN THE TABLE BELOW.

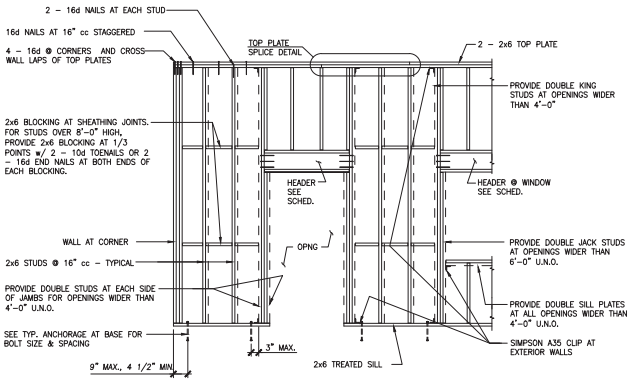
OPENING SIZE	BRICK VENEER	MASONRY WALL
	ANGLE SIZE	ANGLE SIZE
UP TO 1'-0"	NONE	NONE
1'-1" TO 3'-4"	L 4 x 4 x 1/4	L 3 1/2 x 3 1/2 x 1/4
3'-5" TO 4'-8"	L 4 x 4 x 1/4	L 4 x 3 1/2 x 1/4
4'-9" TO 6'-8"	L 6 x 4 x 5/16	L 6 x 3 1/2 x 5/16
6'-9" TO 9'-4"	L 6 x 4 x 3/8	L 6 x 3 1/2 x 3/8

ALL ANGLES MUST HAVE 8" OF BEARING AT EACH END.
ALL ANGLES LONG LEG VERTICAL.

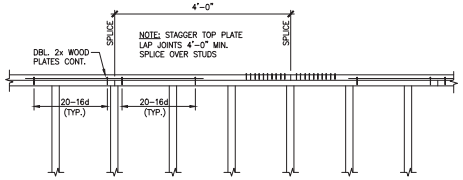


NOTE:
PROVIDE BOND BEAMS AT THE BOTTOM AND TOP OF WALL OPENINGS w/ 2-#5 EXTENDING AT LEAST 2'-0" PAST THE OPENING. U.N.O.

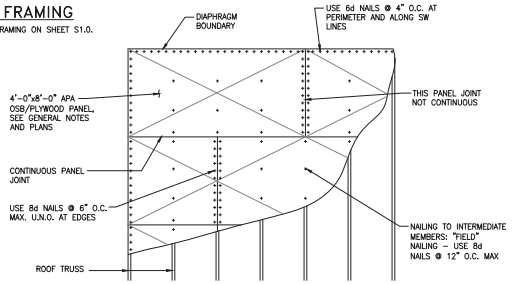
TYPICAL MASONRY WALL
REINFORCEMENT PLAN DETAIL



TYPICAL WALL FRAMING
SEE GENERAL NOTES FOR WOOD FRAMING ON SHEET S1.0.



TYPICAL BEARING WALL TOP PLATE SPLICE



TYPICAL ROOF NAILING PATTERN

14296 RMR RETAINING WALL
Plotted By: Ryan Mills
Plotted On: 6/2/2015

Revisions
Date
4/15/2020 ISSUED FOR BID

OWNER:
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL:
DATE: 4/15/2020
DAVID L. VONARX E-26647

CIVIL ENGINEER:
VonArx Engineering
10765 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
OFFICE: (636) 797-8425
CELL: (314) 952-5338
CERTIFICATE OF AUTHORITY 0975

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Job Number
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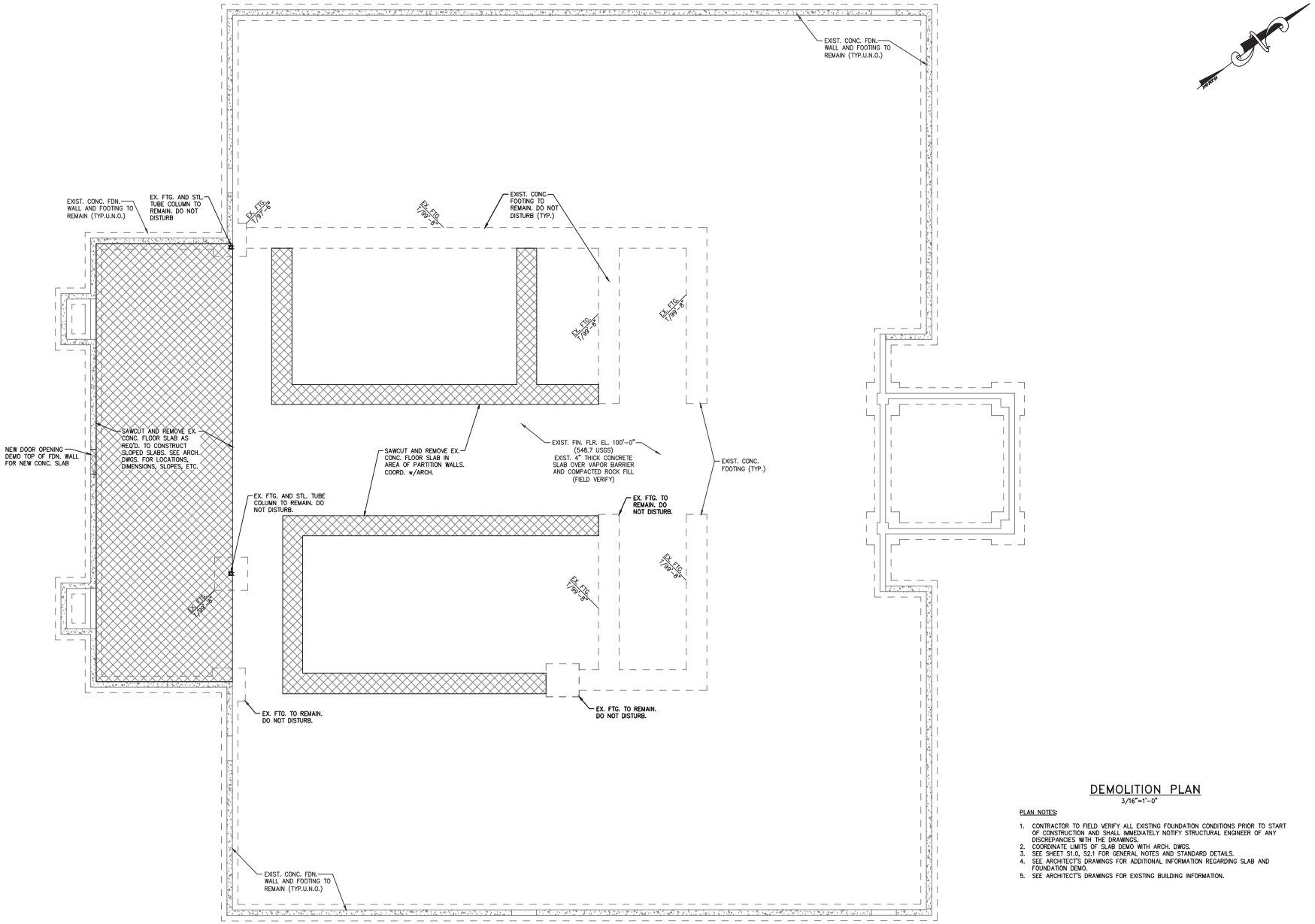
Sheet Number
S2.1

STANDARD DETAILS



DEMOLITION PLAN

3/16"=1'-0"

PLAN NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL EXISTING FOUNDATION CONDITIONS PRIOR TO START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY STRUCTURAL ENGINEER OF ANY DISCREPANCIES WITH THE DRAWINGS.
2. COORDINATE LIMITS OF SLAB DEMO WITH ARCH. DWGS.
3. SEE SHEET S1.0, S2.1 FOR GENERAL NOTES AND STANDARD DETAILS.
4. SEE ARCHITECT'S DRAWINGS FOR ADDITIONAL INFORMATION REGARDING SLAB AND FOUNDATION DEMO.
5. SEE ARCHITECT'S DRAWINGS FOR EXISTING BUILDING INFORMATION.

DEMOLITION AND FOUNDATION PLAN

Date	Revisions
4/15/2020	ISSUED FOR BID

OWNER:
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL:
DATE:
DAVID L. VONARX E-26647

CIVIL ENGINEER:
VonArx Engineering
10785 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
OFFICE: (636) 797-8425
CELL: (314) 952-3338
CERTIFICATE OF AUTHORITY 0975

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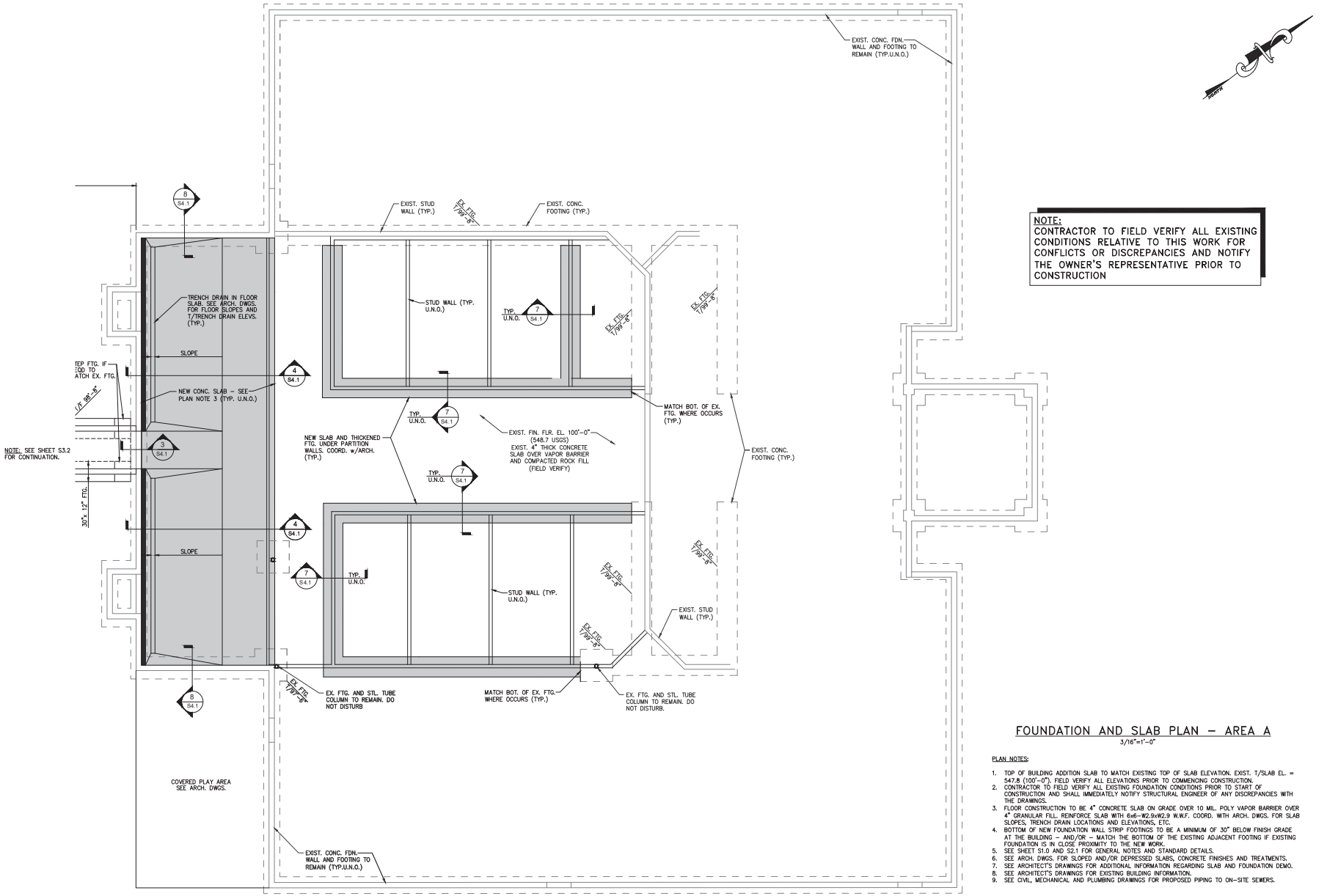
4/15/2020

SCALE
AS NOTED

Job Number
15169

Sheet Number
S3.0

14296 RWP RETAINING WALL
Plotted By: DLV
Plotted On: 6/2015



NOTE:
CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS RELATIVE TO THIS WORK FOR CONFLICTS OR DISCREPANCIES AND NOTIFY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION

FOUNDATION AND SLAB PLAN – AREA A

3/16"=1'-0"

PLAN NOTES:

1. TOP OF BUILDING ADDITION SLAB TO MATCH EXISTING TOP OF SLAB ELEVATION. EXIST. T/SLAB EL. = 547.8 (100'-0"). FIELD VERIFY ALL ELEVATIONS PRIOR TO COMMENCING CONSTRUCTION.
2. CONTRACTOR TO FIELD VERIFY ALL EXISTING FOUNDATION CONDITIONS PRIOR TO START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY STRUCTURAL ENGINEER OF ANY DISCREPANCIES WITH THE DRAWINGS.
3. FLOOR CONSTRUCTION TO BE 4" CONCRETE SLAB ON GRADE OVER 10 MIL. POLY VAPOR BARRIER OVER 4" GRANULAR FILL. REINFORCE SLAB WITH 6x6–W2.9xW2.9 W.W.F. COORD. WITH ARCH. DWGS. FOR SLAB SLOPES, TRENCH DRAIN LOCATIONS AND ELEVATIONS, ETC.
4. BOTTOM OF NEW FOUNDATION WALL STRIP FOOTINGS TO BE A MINIMUM OF 30" BELOW FINISH GRADE AT THE BUILDING – AND/OR – MATCH THE BOTTOM OF THE EXISTING ADJACENT FOOTING IF EXISTING FOUNDATION IS IN CLOSE PROXIMITY TO THE NEW WORK.
5. SEE SHEET S1.0 AND S2.1 FOR GENERAL NOTES AND STANDARD DETAILS.
6. SEE ARCH. DWGS. FOR SLOPED AND/OR DEPRESSED SLABS, CONCRETE FINISHES AND TREATMENTS.
7. SEE ARCHITECT'S DRAWINGS FOR ADDITIONAL INFORMATION REGARDING SLAB AND FOUNDATION DEMO.
8. SEE ARCHITECT'S DRAWINGS FOR EXISTING BUILDING INFORMATION.
9. SEE CIVIL, MECHANICAL AND PLUMBING DRAWINGS FOR PROPOSED PIPING TO ON–SITE SEWERS.

FDN. AND SLAB PLAN - AREA A

Date	Revisions
4/15/2020	ISSUED FOR BID

OWNER:
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL:
DAVID L. VONARX E-26647
DATE:

CIVIL ENGINEER:
VonArx Engineering
10765 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
OFFICE: (636) 797-8425
CELL: (314) 952-3338
CERTIFICATE OF AUTHORITY 0975

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House Springs, Missouri 63051

ISSUE DATE
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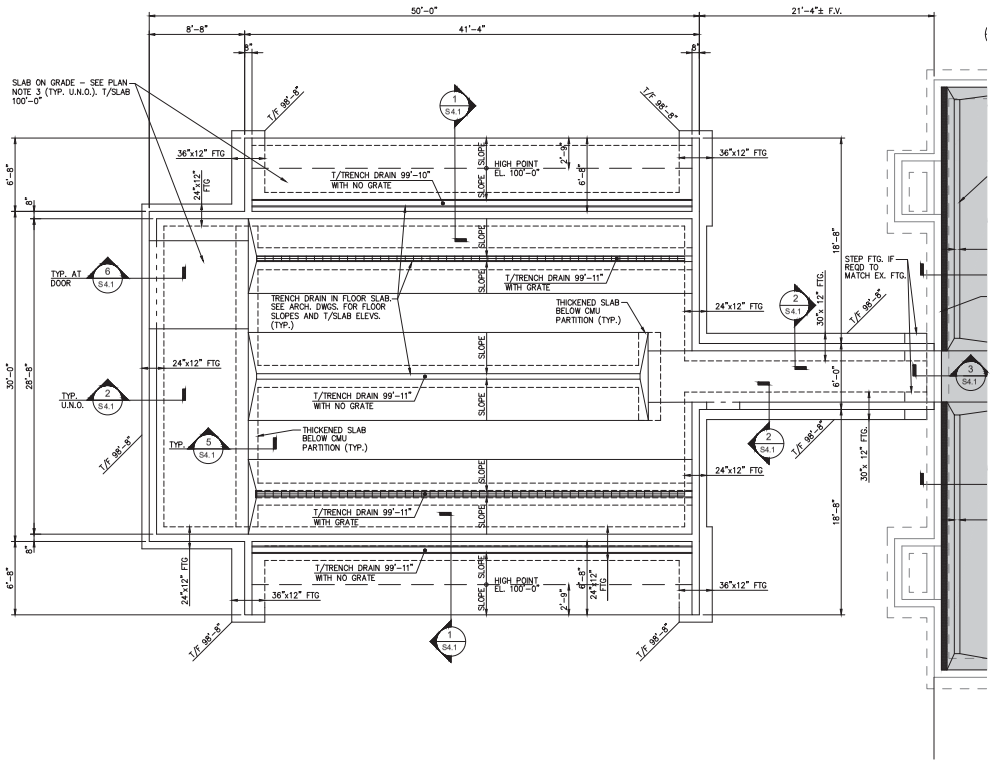
SCALE
AS NOTED

Job Number
15169

Sheet Number
S3.1

14506 RWP RETAINING WALL
Plotted By: TJ
Plotted On: 6/2015



FOUNDATION AND SLAB PLAN – AREA B

3/16"=1'-0"

PLAN NOTES:

1. TOP OF BUILDING ADDITION SLAB TO MATCH EXISTING TOP OF SLAB ELEVATION. EXIST. T/SLAB EL. = 547.8 (100'-0"). FIELD VERIFY ALL ELEVATIONS PRIOR TO COMMENCING CONSTRUCTION.
2. CONTRACTOR TO FIELD VERIFY ALL EXISTING FOUNDATION CONDITIONS PRIOR TO START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY STRUCTURAL ENGINEER OF ANY DISCREPANCIES WITH THE DRAWINGS.
3. FLOOR CONSTRUCTION TO BE 4" CONCRETE SLAB ON GRADE OVER 10 MIL. POLY VAPOR BARRIER OVER 4" GRANULAR FILL. REINFORCE SLAB WITH 6x6–W2.9xW2.9 W.W.F. COORD. WITH ARCH. DWGS. FOR SLAB SLOPES, TRENCH DRAIN LOCATIONS AND ELEVATIONS, ETC.
4. BOTTOM OF NEW FOUNDATION WALL STRIP FOOTINGS TO BE A MINIMUM OF 30" BELOW FINISH GRADE AT THE BUILDING – AND/OR – MATCH THE BOTTOM OF THE EXISTING ADJACENT FOOTING IF EXISTING FOUNDATION IS IN CLOSE PROXIMITY TO THE NEW WORK.
5. SEE SHEET S1.0 AND S2.1 FOR GENERAL NOTES AND STANDARD DETAILS.
6. SEE ARCH. DWGS. FOR SLOPED AND/OR DEPRESSED SLABS, CONCRETE FINISHES AND TREATMENTS.
7. SEE ARCHITECT'S DRAWINGS FOR ADDITIONAL INFORMATION REGARDING SLAB AND FOUNDATION DEMO.
8. SEE ARCHITECT'S DRAWINGS FOR EXISTING BUILDING INFORMATION.
9. SEE CIVIL, MECHANICAL AND PLUMBING DRAWINGS FOR PROPOSED PIPING TO ON-SITE SEWERS.

FDN. AND SLAB PLAN - AREA B

Date	4/15/2020
Revisions	ISSUED FOR BID

OWNER:
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL:
DATE: 04/15/2020
DAVID L. VONARX E-26647

CIVIL ENGINEER:
VonArx Engineering
10765 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
OFFICE: (636) 797-8405
CELL: (314) 952-3338
CERTIFICATE OF AUTHORITY 0975

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4848 State Rte. 30
House Springs, Missouri 63051

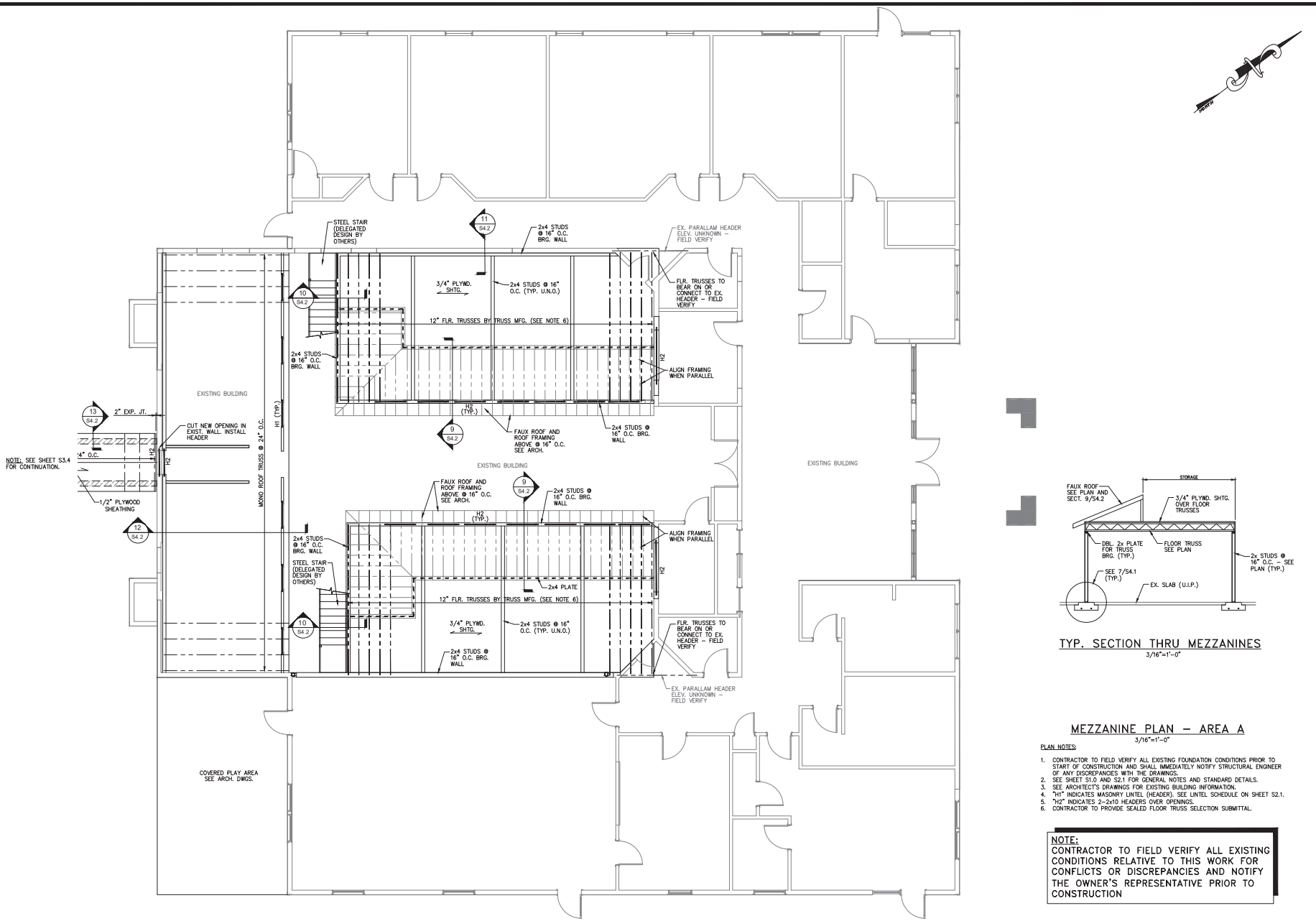
ISSUE DATE
4/15/2020

SCALE
AS NOTED

Job Number
15169

Sheet Number
S3.2

14296 RWP RETAINING WALL
Model: Fdn Plan
Plotted On 6/2015



TYP. SECTION THRU MEZZANINES
3/16"=1'-0"

MEZZANINE PLAN – AREA A
3/16"=1'-0"

PLAN NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL EXISTING FOUNDATION CONDITIONS PRIOR TO START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY STRUCTURAL ENGINEER OF ANY DISCREPANCIES WITH THE DRAWINGS.
2. SEE SHEET S1.0 AND S2.1 FOR GENERAL NOTES AND STANDARD DETAILS.
3. SEE ARCHITECT'S DRAWINGS FOR EXISTING BUILDING INFORMATION.
4. "H1" INDICATES MASONRY LINTEL (HEADER). SEE LINTEL SCHEDULE ON SHEET S2.1.
5. "H2" INDICATES 2-2x10 HEADERS OVER OPENINGS.
6. CONTRACTOR TO PROVIDE SEALED FLOOR TRUSS SELECTION SUBMITTAL.

NOTE:
CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS RELATIVE TO THIS WORK FOR CONFLICTS OR DISCREPANCIES AND NOTIFY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION

MEZZANINE PLAN - AREA A

Date	Revisions
4/15/2020	ISSUED FOR BID

OWNER:
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL:
DAVID L. VONARX E-26647

DATE:

CIVIL ENGINEER:
VonArx Engineering
10785 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
OFFICE: (636) 797-8405
CELL: (314) 952-5308
CERTIFICATE OF AUTHORITY 0975

ANIMAL RESOURCE CENTER
4848 State Rte. 30
House Springs, Missouri 63051

ISSUE DATE
4/15/2020

SCALE
AS NOTED

Job Number
15169

Sheet Number
S3.3

14506 RWP RETAINING WALL
Plotted By: DAVID VONARX
Plotted On: 6/2/2015

ROOF PLAN - AREA B

ROOF FRAMING PLAN – AREA B

3/16"=1'-0"

PLAN NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL EXISTING FOUNDATION CONDITIONS PRIOR TO START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY STRUCTURAL ENGINEER OF ANY DISCREPANCIES WITH THE DRAWINGS.
2. SEE SHEET S1.0 AND S2.1 FOR GENERAL NOTES AND STANDARD DETAILS.
3. SEE ARCHITECT'S DRAWINGS FOR EXISTING BUILDING INFORMATION.
4. "H" INDICATES 3-2x10 MASONRY LINTEL OVER. SEE LINTEL SCHEDULE ON SHEET S2.1.
5. "H2" INDICATES 2-2x10 HEADERS OVER OPENINGS.

SECTION THRU BUILDING – AREA B

1/4"=1'-0"

ANIMAL RESOURCE CENTER
4848 State Rte. 30
House Springs, Missouri 63051

ISSUE DATE: 4/15/2020
SCALE: AS NOTED
Job Number: 15169
Sheet Number: S3.4

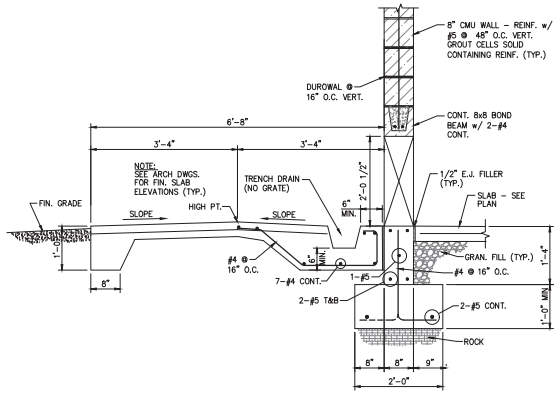
CIVIL ENGINEER:
VonArx Engineering
10785 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
OFFICE: (636) 797-4425
CELL: (314) 952-5038
donarx@vonarxengineering.com
CERTIFICATE OF AUTHORITY 0975

SEAL:
DAVID L. VONARX E-26647

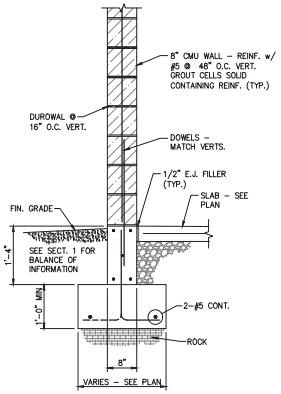
OWNER:
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

Date	Revisions
4/15/2020	ISSUED FOR BID

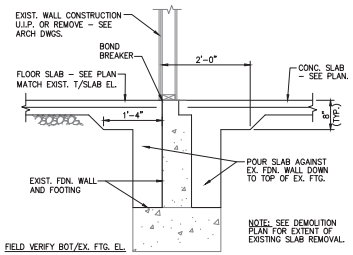
14096 BARR RETAINING WALL
Plotted By: DLV
Plotted On: 8/2015



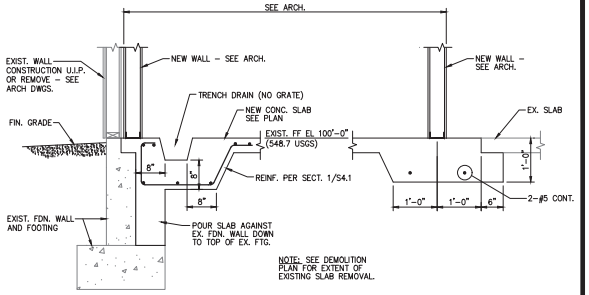
SECTION 1
3/4"=1'-0" S3.1



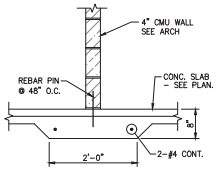
SECTION 2
3/4"=1'-0" S3.1



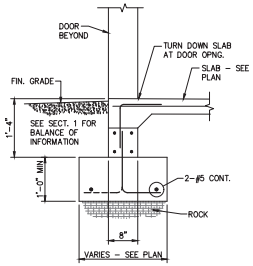
SECTION 3
3/4"=1'-0" S3.1



SECTION 4
3/4"=1'-0" S3.1



SECTION 5
3/4"=1'-0" S3.1



SECTION 6
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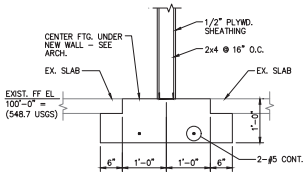
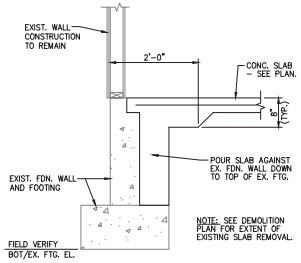
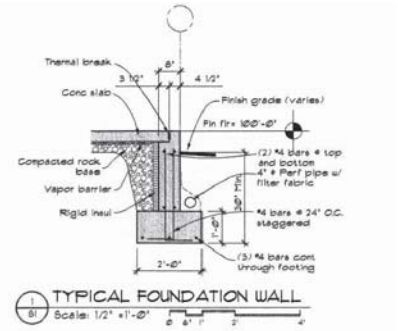


SECTION 7
3/4"=1'-0" S3.1



SECTION 8
3/4"=1'-0" S3.1



ASSUMED EXISTING CONDITION AT PERIMETER FOUNDATION WALL IN AREA OF NEW CONSTRUCTION – SECTION SHOWN IS TAKEN FROM ORIGINAL CONSTRUCTION DRAWINGS FOR INFORMATION ONLY

SECTIONS AND DETAILS

1409R RWR RETAINING WALL
Project Number
Plotted On 6/2015

Revisions	Date
ISSUED FOR BID	4/15/2020

OWNER:
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL:

DATE:
DAVID L. VONARX E-26647

CIVIL ENGINEER
VonArx Engineering
10765 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
OFFICE: (636) 797-8405
CELL: (314) 952-5308
CERTIFICATE OF AUTHORITY 0975

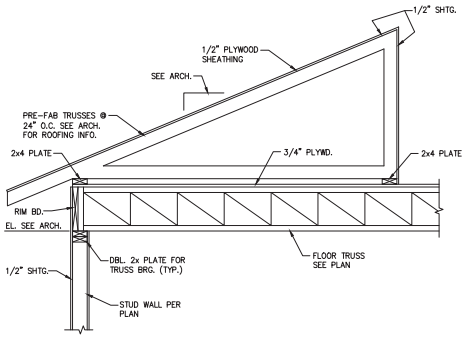
ANIMAL RESOURCE CENTER
4848 State Rte. 30
House Springs, Missouri 63051

ISSUE DATE
4/15/2020

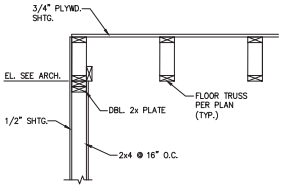
SCALE
AS NOTED

Job Number
15169

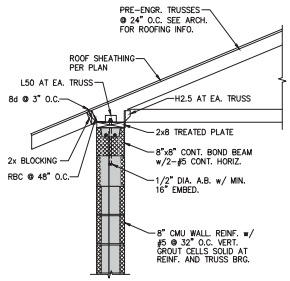
Sheet Number
S4.1



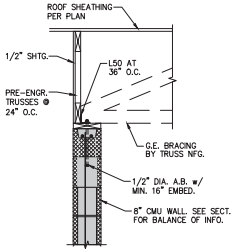
SECTION 9
3/4"=1'-0" S3.2



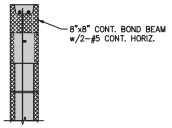
SECTION 10
3/4"=1'-0" S3.2



SECTION 13
3/4"=1'-0" S3.2



SECTION 14
3/4"=1'-0" S3.2



SECTION 15
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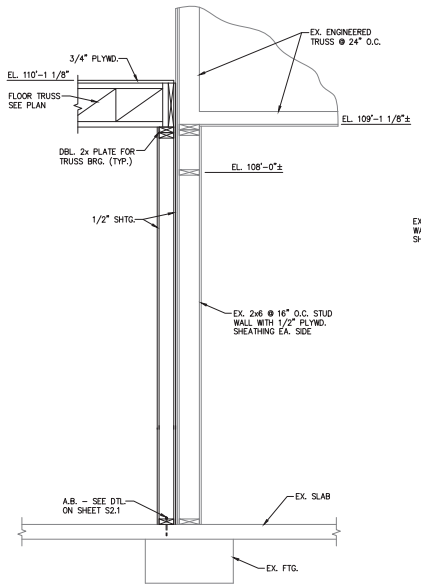

SECTION 11
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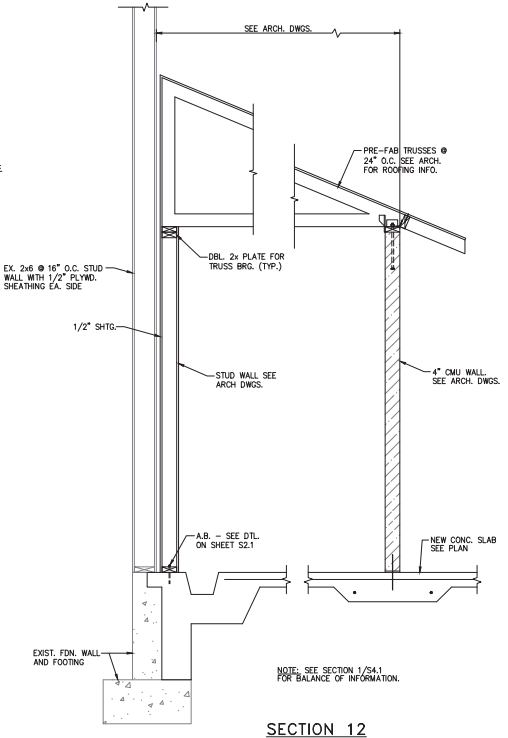


SECTION 12
3/4"=1'-0" S3.2

FRAMING SECTIONS

Revisions	Date
ISSUED FOR BID	4/15/2020

OWNER:
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL:
DAVID L. VONARX E-26647
DATE:

CIVIL ENGINEER:
VonArx Engineering
10765 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
OFFICE: (636) 797-8405
CELL: (314) 952-3338
CERTIFICATE OF AUTHORITY 0975

ANIMAL RESOURCE CENTER
4848 State Rte. 30
House Springs, Missouri 63051

ISSUE DATE
4/15/2020

SCALE
AS NOTED

Job Number
15169

Sheet Number
S4.2

14296 RWR RETAINING WALL
Plotted By: Ryan Wilson
Plotted On: 6/2/2015

JEFFERSON COUNTY ANIMAL RESOURCE CENTER

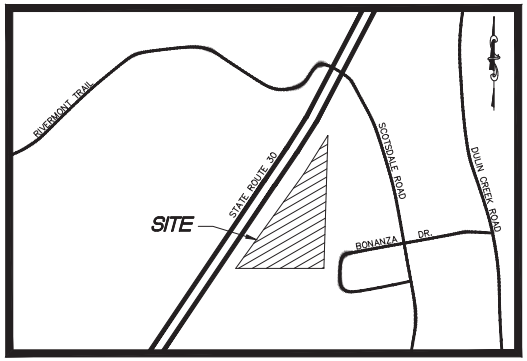
SITE DEVELOPMENT PLANS

PART OF THE SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 42 NORTH, RANGE 4 EAST

Town of Scotsdale, Jefferson County, Missouri

GENERAL NOTES

1. THE UTILITIES SHOWN HEREIN WERE PLOTTED FROM AVAILABLE INFORMATION AND DO NOT NECESSARILY REFLECT THE ACTUAL EXISTENCE, NON-EXISTENCE, SIZE, TYPE, OR LOCATION OF THESE OR OTHER UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION OF ALL UTILITIES, SHOWN OR NOT SHOWN, AND SAID UTILITIES SHALL BE LOCATED IN THE FIELD PRIOR TO ANY CONSTRUCTION OF IMPROVEMENTS. THESE PROVISIONS SHALL IN NO WAY ABSOLVE ANY PARTY FROM COMPLYING WITH THE UNDERGROUND FACILITY SAFETY AND DAMAGE PREVENTION ACT, CHAPTER 319 RSMo.
2. ALL ELEVATIONS ARE BASED ON U.S.G.S. DATUM.
3. ELEVATION CONTOURS AND BOUNDARY SURVEY PREPARED BY ASSOCIATED LAND SURVEYORS.
4. ALL MATERIALS AND METHODS OF CONSTRUCTION TO MEET THE CURRENT STANDARDS AND SPECIFICATIONS OF JEFFERSON COUNTY.
5. ALL GRADED AREAS SHALL BE PROTECTED FROM EROSION BY EROSION CONTROL DEVICES AND/OR SEEDING AND MULCHING AS REQUIRED BY THE JEFFERSON COUNTY PUBLIC WORKS DEPT. & MISSOURI DNR.
6. GRADING CONTRACTOR SHALL INSTALL SILTATION CONTROL PRIOR TO STARTING THE GRADING.
7. ALL FILLS AND BACKFILLS SHALL BE MADE OF SELECTED EARTH MATERIALS, FREE FROM BROKEN MASONRY, ROCK, FROZEN EARTH, RUBBISH, ORGANIC MATERIAL AND DEBRIS.
8. GRADING CONTRACTOR SHALL KEEP EXISTING ROADWAYS CLEAN OF MUD AND DEBRIS AT ALL TIMES.
9. PROPOSED CONTOURS SHOWN ARE FINISHED ELEVATIONS ON PAVED AREAS.
10. NO GRADE SHALL EXCEED 3:1 SLOPE.
11. NO CHANGE IN WATERSHEDS SHALL BE PERMITTED.
12. INTERIM STORMWATER DRAINAGE CONTROL IN THE FORM OF SILTATION CONTROL MEASURES ARE REQUIRED.
13. ALL STORMWATER SHALL BE DISCHARGED AT AN ADEQUATE NATURAL DISCHARGE POINT.
14. ADEQUATE TEMPORARY OFF-STREET PARKING SHALL BE PROVIDED FOR CONSTRUCTION EMPLOYEES. PARKING ON NON-SURFACED AREAS SHALL BE PROHIBITED IN ORDER TO ELIMINATE THE CONDITION WHEREBY MUD FROM CONSTRUCTION AND EMPLOYEE VEHICLES IS TRACKED ONTO THE PAVEMENT CAUSING HAZARDOUS ROADWAY AND DRIVING CONDITIONS.
15. THE CONTRACTOR IS ADVISED THAT UTILITY COMPANIES WILL REQUIRE COMPENSATION FOR RELOCATION OF THEIR UTILITY FACILITIES WITHIN PUBLIC ROAD RIGHT-OF-WAY. UTILITY RELOCATION COST SHALL BE CONSIDERED THE DEVELOPER'S RESPONSIBILITY. THE DEVELOPER SHOULD ALSO BE AWARE OF EXTENSIVE DELAYS IN UTILITY COMPANY RELOCATIO AND ADJUSTMENTS. SUCH DELAYS WILL NOT CONSTITUTE A CAUSE TO OCCUPANCY PRIOR TO COMPLETION OF ROAD IMPROVEMENTS.
16. THE CONTRACTOR SHALL, AT ALL TIMES, CONTAIN MUD AND OTHER SPOILS ON THIS SITE. NO VEHICLE, TRAILER OR CONSTRUCTION EQUIPMENT IS TO DEPOSIT MUD OR ANY OTHER MATERIAL ON PUBLIC STREETS. PROJECT WILL BE STOPPED IF STREETS ARE NOT CLEANED IMMEDIATELY.
17. THE CONTRACTOR SHALL NOTIFY JEFFERSON COUNTY DEPT. OF PUBLIC WORKS A MIN. OF 48 HOURS PRIOR TO THE COMMENCEMENT OF GRADING AND/OR CONSTRUCTION.
18. WHEN CLEARING AND/OR GRADING OPERATIONS ARE COMPLETED OR SUSPENDED FOR MORE THAN 30 DAYS, ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO RETAIN SOIL MATERIALS ON SITE. PROTECTIVE MEASURES MAY BE REQUIRED BY THE DIRECTOR OF PUBLIC WORKS/ CITY ENGINEER SUCH AS PERMANENT SEEDING, PERIODIC WETTING, MULCHING, OR OTHER SUITABLE MEANS.
19. IF CUT AND FILL OPERATIONS OCCUR DURING A SEASON NOT FAVORABLE FOR IMMEDIATE ESTABLISHMENT OF A PERMANENT GROUND COVER, A FAST GERMINATING ANNUAL SUCH AS RYE GRASSES OR SUDAN GRASSES SHALL BE UTILIZED TO RETARD EROSION, IF ADEQUATE STORMWATER DETENTION AND EROSION CONTROL DEVICES HAVE NOT BEEN ESTABLISHED.
20. STORM SEWER PIPES, OUTLETS AND CHANNELS SHALL BE PROTECTED BY SILT BARRIERS AND KEPT FREE OF WASTE AND SILT AT ALL TIMES PRIOR TO FINAL SURFACE STABILIZATION AND/OR PAVING.
21. SILTATION FENCES SHALL BE INSPECTED PERIODICALLY FOR DAMAGE AND FOR THE AMOUNT OF SEDIMENT WHICH HAS ACCUMULATED. REMOVAL OF SEDIMENT WILL BE REQUIRED WHEN IT REACHES 1/2 THE HEIGHT OF THE SILTATION FENCE.
22. STRAW BALES SHALL BE INSPECTED PERIODICALLY FOR DETERIORATION. BALES WHICH HAVE ROTTED OR FAILED SHALL BE REPLACED. REMOVAL OF SEDIMENT WILL BE REQUIRED WHEN IT REACHES 1/2 THE HEIGHT OF THE BALES.
23. ALL FILLS PLACED UNDER PROPOSED STORM AND SANITARY SEWER LINES AND/OR PAVED AREAS, INCLUDING TRENCH BACKFILLS WITHIN AND OFF THE ROAD RIGHT-OF-WAY, SHALL BE COMPACTED TO 90% OF THE MAXIMUM DENSITY AS DETERMINED BY THE "MODIFIED AASHTO T-180 COMPACTION TEST" (ASTM D-1557) FOR THE ENTIRE DEPTH OF FILL. COMPACTED GRANULAR BACKFILL IS REQUIRED IN ALL TRENCH EXCAVATION WITHIN THE STREET RIGHT-OF-WAY AND UNDER ALL PAVED AREAS. ALL TESTS SHALL BE PERFORMED UNDER THE DIRECTION OF AND VERIFIED BY A SOILS ENGINEER CONCURRENT WITH GRADING AND BACKFILLING OPERATIONS.
24. ALL TRASH AND DEBRIS ONSITE, EITHER EXISTING OR FROM CONSTRUCTION, MUST BE REMOVED AND PROPERLY DISPOSED OF OFFSITE.
25. DEBRIS AND FOUNDATION MATERIAL FROM ANY EXISTING ON-SITE BUILDING OR STRUCTURE WHICH IS SCHEDULED TO BE RAZED FOR THIS DEVELOPMENT MUST BE PROPERLY SHALL BE STOCKPILED AS DIRECTED BY THE GEOTECHNICAL ENGINEER FOR USE AS ROCK BLANKET OR IN THE ROCK BUTTRESS' REQUIRED ON SITE.
26. THE WELL AND ON-SITE SEWAGE DISPOSAL ON THIS PROPERTY SHALL BE PROTECTED DURING CONSTRUCTION IN A MANNER ACCEPTABLE TO JEFFERSON COUNTY AND THE MISSOURI DEPARTMENT OF NATURAL RESOURCES.



LOCATION MAP

PROJECT BENCHMARK: STATION: JE-104 A STANDARD MO DNR GRS DISK SATMPED "JE-104, 2009". IT IS LOCATED IN HOUSE SPRINGS, MO. IT IS 89.5 FT. EAST OF THE BUCHEIT SIGN POST. 82.4 FT. ESE OF AN ANGLE POINT IN CURB, 31.5'SW OF THE CENTER OF MISSOURI ROUTE MM, 68.5 FT. NW OF THE CENTER OF THE EAST ENTRANCE TO BUCHEIT AND 67.6 FT. NW OF THE CENTER OF A LIGHT POLE. ELEVATION: 466.21

SITE BENCHMARK #1: A CUT "U"ON THE EAST EDGE OF A CONCRETE PEDESTAL FOR A LIGHT STANDARD. IT IS 59± FT NORTHEAST OF THE MOST EASTERN CORNER OF THE BUILDING AT #4848 STATE ROUTE 30 AND 30± NORTHWEST OF A ROCK BLUFF. ELEVATION: 547.25

SITE BENCHMARK #2: A CUT "L" ON THE CONCRETE PEDESTAL FOR A LIGHT STANDARD. IT IS 141± FT SOUTHEAST ALONG THE DRIVE TO 4848 STATE ROUTE 30 FROM THE OF THE EAST EDGE OF THE NORTH BOUND SHOULDER OF STATE ROUTE 30. ITIS 18± FT NORTH OF THE CENTER LINE OF DRIVE TO 4848 STATE ROUTE 30 AND 7± FT NORTHWEST OF A GATE. ELEVATION: 511.67

DRAWING INDEX

C1.0	TITLE SHEET
C1.1	SITE SURVEY
C2.0	EXISTING CONDITIONS
C3.0	DEMOLITION PLAN
C4.1	SITE PLAN
C4.2	ENLARGED GRADING PLAN
C5.0	CONSTRUCTION DETAILS
C5.1	DETAILS AND PROFILES

SITE DATA

PROPERTY OWNER: JEFFERSON COUNTY
PO BOX 100
HILLSBORO, MO 63050

EXISTING ZONING: PLANNED COMMERCIAL

SITE ACREAGE: 7.91 ACRES

SITE ADDRESS: 4848 STATE RT 30 63051

PARCEL NUMBER: 07-3.0-05.0-0-000-082

FIRM: COMMUNITY - PANEL NUMBER 290990 0475E

SERVICE DISTRICTS

FIRE: HIGH RIDGE FIRE PROTECTION DISTRICT
2842 HIGH RIDGE BLVD.
HIGH RIDGE, MISSOURI 63049
636.677-3371

AMBULANCE: BIG RIVER AMBULANCE DISTRICT
6321 LORENDS DRIVE
CEDAR HILL, MISSOURI 63016
636.282.2654

SCHOOL: NORTHWEST R1 SCHOOL DISTRICT
2843 COMMUNITY LANE.
HIGH RIDGE, MISSOURI 63049
636.677.3473

SEWER: ON-SITE SEWAGE DISPOSAL

WATER: PRIVATE WELL

ELECTRIC: SPIRE
P.O. BOX 219
FESTUS, MISSOURI 63028
636.931.5639

ELECTRIC: AMEREN UE
6450 HIGHWAY MM
HOUSE SPRINGS, MISSOURI 63051
636.671.6134

TELEPHONE: SOUTHWESTERN BELL TELEPHONE CO.
120 N. 2ND
FESTUS, MISSOURI 63028
636.931.7506

POST OFFICE: U.S. POST OFFICE
7050 STATE ROAD BB
CEDAR HILL, MISSOURI 63016
800.275.8777

CABLE TV: CHARTER COMMUNICATIONS
941 CHARTER COMMONS
TOWN AND COUNTRY, MISSOURI 63017
866.373.3884

JEFFERSON COUNTY 911: 5475 BUCKEYE VALLEY ROAD
HOUSE SPRINGS, MISSOURI 63051
636.797.9797

ABBREVIATIONS

N/F	NOW OR FORMERLY
w	WIDE
DB.	DEED BOOK
PB.	PLAT BOOK
PG.	PAGE
CONC.	CONCRETE
SAN.	SANITARY
MH	MANHOLE
R	RADIUS
L	LENGTH
D	DELTA
TBR	TO BE REMOVED
TBR&R	TO BE REMOVED & REPLACED
UIP	TO BE USED IN PLACE
D.S.	ROOF DOWNSPOUT

LEGEND

- UTILITY POLE
- FIRE HYDRANT
- GAS VALVE
- EXIST. SANITARY SEWER
- EXIST. STORM SEWER
- EXIST. GAS LINE
- EXIST. WATER LINE
- EXIST. OVERHEAD ELECTRIC LINE
- EXISTING CONTOURS
- EXISTING SOIL BORING
- PROPOSED CONTOURS
- PROPOSED SANITARY SEWERS
- PROPOSED STORM SEWERS
- PROPOSED LIGHT STANDARD
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- PROPOSED SILT FENCE

CALL BEFORE YOU DIG!
1-800-DIG-RITE

TITLE SHEET

Date	Revisions
4/15/2020	ISSUED FOR BID

OWNER: Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL: DAVID L. VONARX E-26647 — DATE:

CIVIL ENGINEER: VonArx Engineering
10765 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
CERTIFICATE OF AUTHORITY 0975
OFFICE: (636) 797-8425
CELL: (314) 952-5338

ANIMAL RESOURCE CENTER
4848 State Rte. 30
House Springs, Missouri 63051

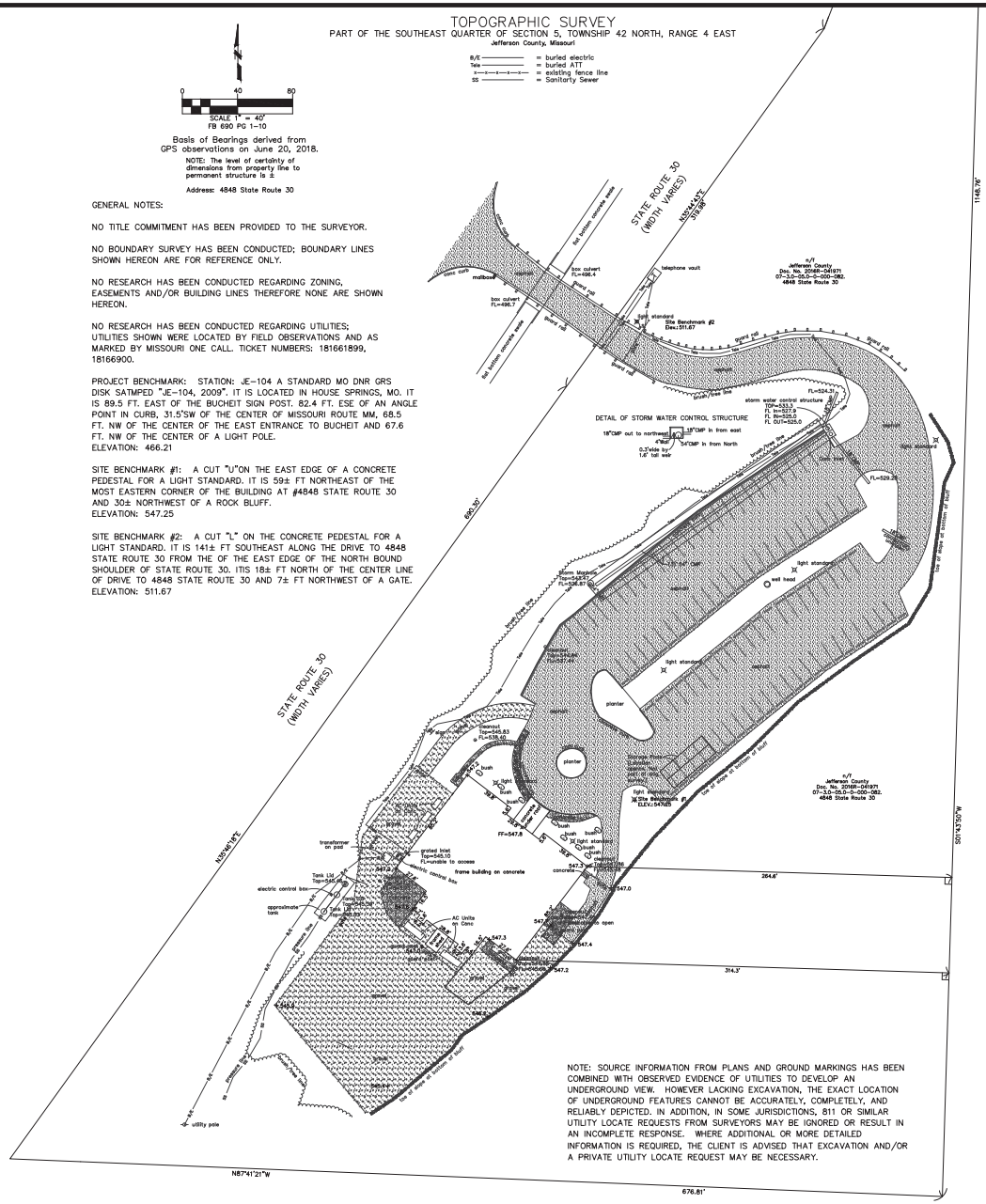
ISSUE DATE: 4/15/2020
SCALE: AS NOTED
Job Number: 15169
Sheet Number: C1.0

14306 RWP RETAINING WALL
Plotted By: Jeff Hill
Plotted On: 6/2015

TOPOGRAPHIC SURVEY

PART OF THE SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 42 NORTH, RANGE 4 EAST

Jefferson County, Missouri



NOTE: SOURCE INFORMATION FROM PLANS AND GROUND MARKINGS HAS BEEN COMBINED WITH OBSERVED EVIDENCE OF UTILITIES TO DEVELOP AN UNDERGROUND VIEW. HOWEVER LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY, AND RELIABLY DEPICTED. IN ADDITION, IN SOME JURISDICTIONS, 811 OR SIMILAR UTILITY LOCATE REQUESTS FROM SURVEYORS MAY BE IGNORED OR RESULT IN AN INCOMPLETE RESPONSE. WHERE ADDITIONAL OR MORE DETAILED INFORMATION IS REQUIRED, THE CLIENT IS ADVISED THAT EXCAVATION AND/OR A PRIVATE UTILITY LOCATE REQUEST MAY BE NECESSARY.

GENERAL NOTES:

NO TITLE COMMITMENT HAS BEEN PROVIDED TO THE SURVEYOR.

NO BOUNDARY SURVEY HAS BEEN CONDUCTED; BOUNDARY LINES SHOWN HEREON ARE FOR REFERENCE ONLY.

NO RESEARCH HAS BEEN CONDUCTED REGARDING ZONING, EASEMENTS AND/OR BUILDING LINES THEREFORE NONE ARE SHOWN HEREON.

NO RESEARCH HAS BEEN CONDUCTED REGARDING UTILITIES; UTILITIES SHOWN WERE LOCATED BY FIELD OBSERVATIONS AND AS MARKED BY MISSOURI ONE CALL. TICKET NUMBERS: 181661899, 18166900.

PROJECT BENCHMARK: STATION: JE-104 A STANDARD MO DNR GRS DISK SATMPED "JE-104, 2009". IT IS LOCATED IN HOUSE SPRINGS, MO. IT IS 89.5 FT. EAST OF THE BUCHEIT SIGN POST. 82.4 FT. ESE OF AN ANGLE POINT IN CURB, 31.5'SW OF THE CENTER OF MISSOURI ROUTE MM, 68.5 FT. NW OF THE CENTER OF THE EAST ENTRANCE TO BUCHEIT AND 67.6 FT. NW OF THE CENTER OF A LIGHT POLE.
ELEVATION: 466.21

SITE BENCHMARK #1: A CUT "U"ON THE EAST EDGE OF A CONCRETE PEDESTAL FOR A LIGHT STANDARD. IT IS 59± FT NORTHEAST OF THE MOST EASTERN CORNER OF THE BUILDING AT #4848 STATE ROUTE 30 AND 30± NORTHWEST OF A ROCK BLUFF.
ELEVATION: 547.25

SITE BENCHMARK #2: A CUT "L" ON THE CONCRETE PEDESTAL FOR A LIGHT STANDARD. IT IS 141± FT SOUTHEAST ALONG THE DRIVE TO 4848 STATE ROUTE 30 FROM THE OF THE EAST EDGE OF THE NORTH BOUND SHOULDER OF STATE ROUTE 30. ITIS 18± FT NORTH OF THE CENTER LINE OF DRIVE TO 4848 STATE ROUTE 30 AND 7± FT NORTHWEST OF A GATE.
ELEVATION: 511.67

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1-800-DIG-RITE

SITE SURVEY

Date	Revisions
4/15/2020	ISSUED FOR BID

OWNER:
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL:

DATE: 4/15/2020
DAVID L. VONARX E-26647

CIVIL ENGINEER:
VonArx Engineering
10785 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
OFFICE: (636) 797-8425
CELL: (314) 952-3038
CERTIFICATE OF AUTHORITY 0975

ANIMAL RESOURCE CENTER
4848 State Rte. 30
House Springs, Missouri 63051

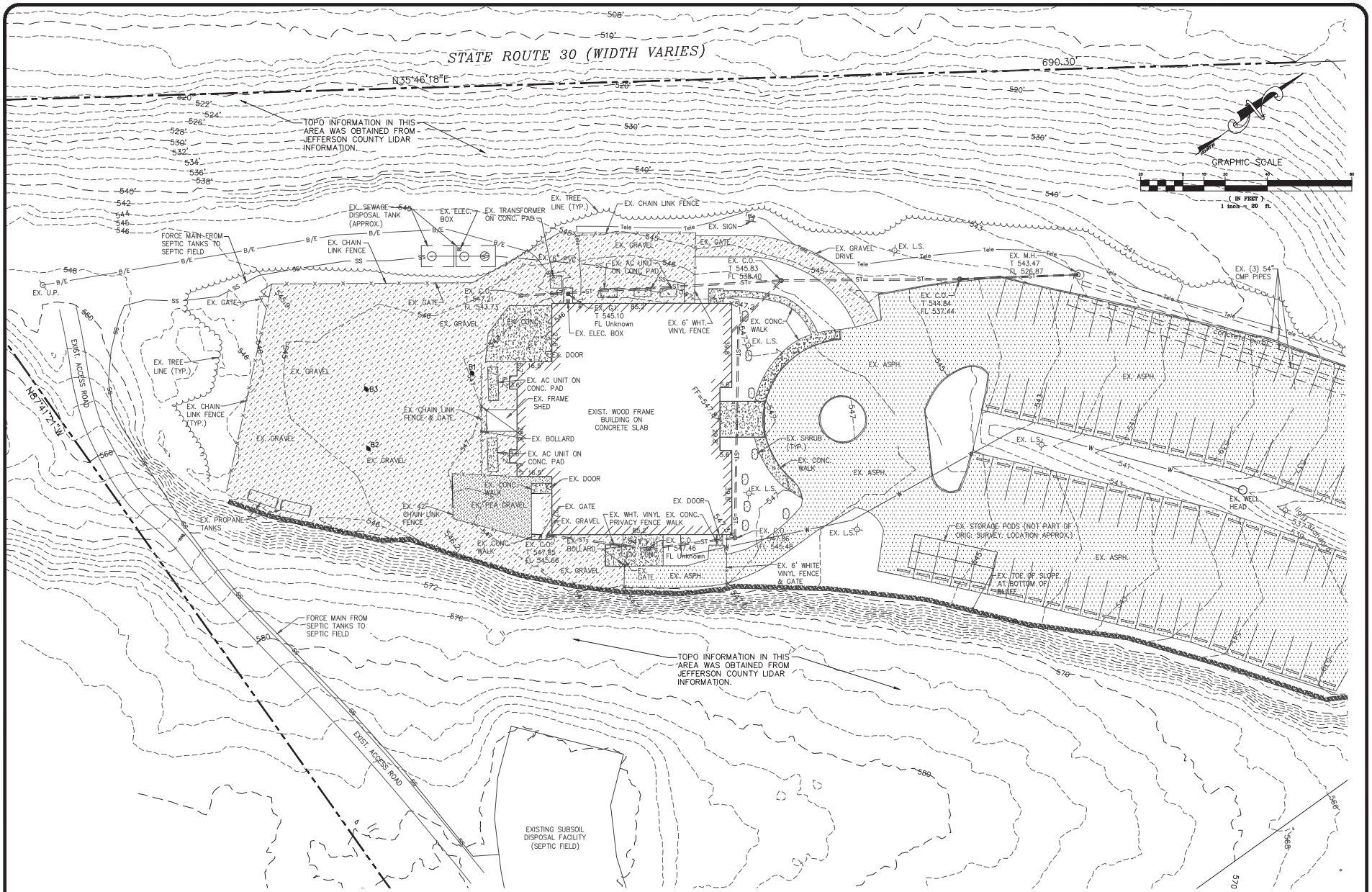
ISSUE DATE
4/15/2020

SCALE

Job Number
15169

Sheet Number
C1.1

14596 RMR RETAINING WALL
Project No. 15169
Plotted On 6/2015



THE UTILITIES SHOWN HEREIN WERE PLOTTED FROM AVAILABLE INFORMATION AND DO NOT NECESSARILY REFLECT THE ACTUAL EXISTENCE, NON-EXISTENCE, SIZE, TYPE, OR LOCATION OF THESE OR OTHER UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION OF ALL UTILITIES, SHOWN OR NOT SHOWN, AND SAID UTILITIES SHALL BE LOCATED IN THE FIELD PRIOR TO ANY CONSTRUCTION OF IMPROVEMENTS. THESE PROVISIONS SHALL IN NO WAY ABSOLVE ANY PARTY FROM COMPLYING WITH THE UNDERGROUND FACILITY SAFETY AND DAMAGE PREVENTION ACT, CHAPTER 319 RSMo.

EXISTING CONDTIONS

1406R RWR RETAINING WALL
Plotted On 6/2015

Revisions	Date
ISSUED FOR BID	4/15/2020

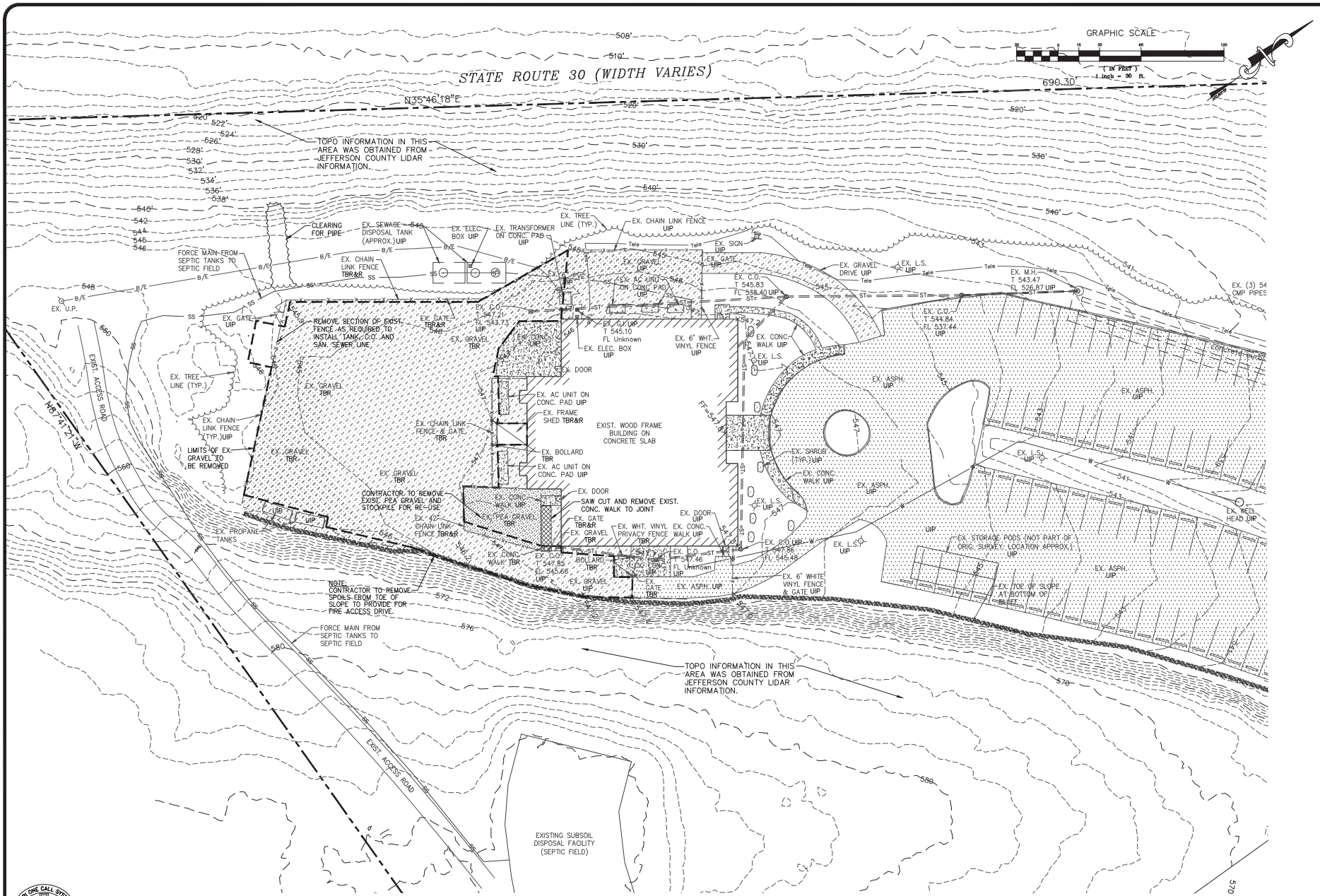
OWNER
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL
DAVID L. VONARX E-26647
DATE:

CIVIL ENGINEER
VonArx Engineering
10765 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
EMAIL: DAVE@VONARXENG.COM
CERTIFICATE OF AUTHORITY 0975
OFFICE: (636) 797-8405
CELL: (314) 952-5308

ANIMAL RESOURCE CENTER
4848 State Rte. 30
House Springs, Missouri 63051

ISSUE DATE
4/15/2020
SCALE
Job Number
15169
Sheet Number
C2.0



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DEMOLITION PLAN

Revisions	Date
ISSUED FOR BID	4/15/2020

OWNER
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

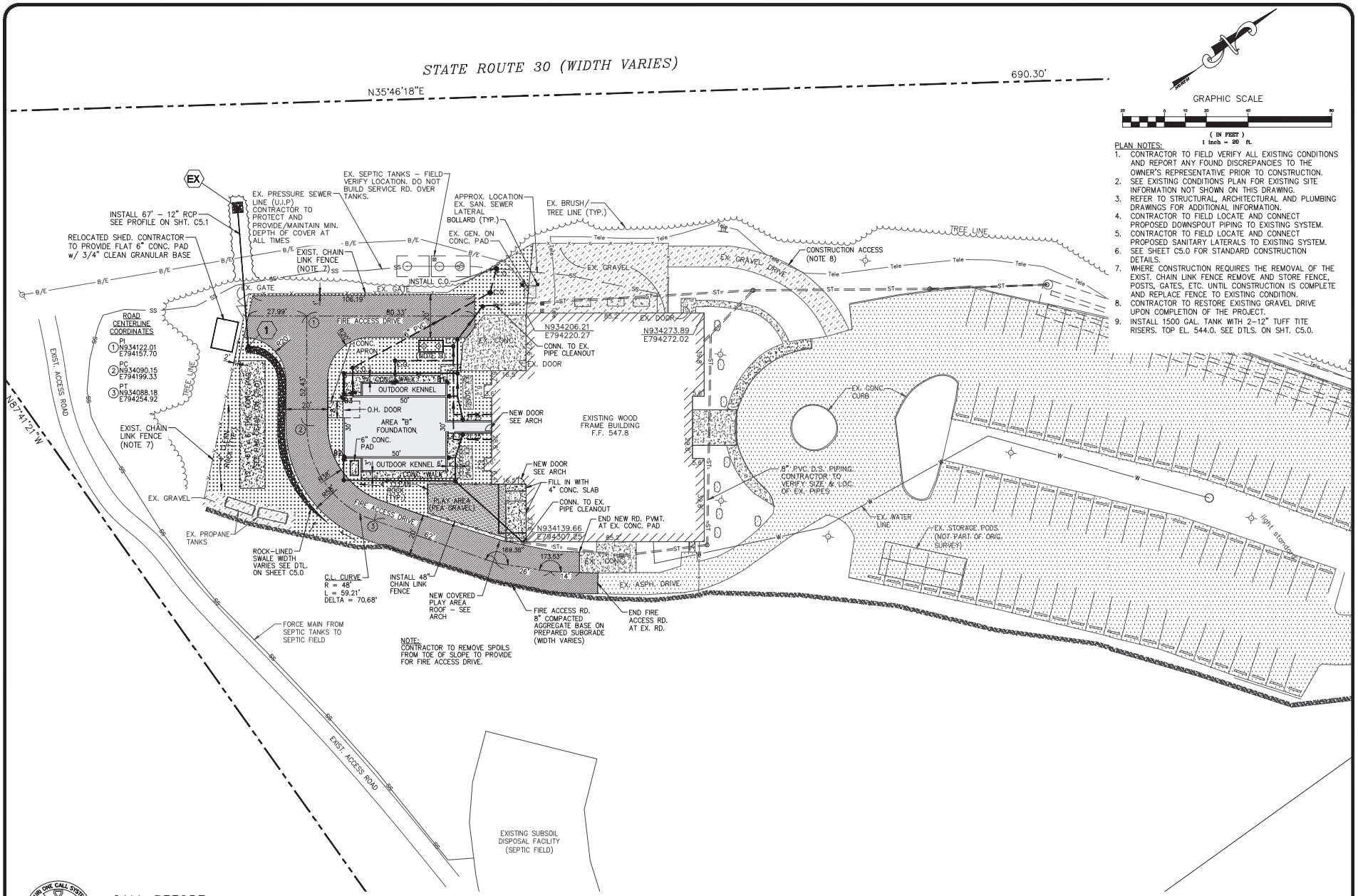
SEAL
DATE: 4/15/2020
DAVID L. VONARX E-26647

CIVIL ENGINEER
VonArx Engineering
10765 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
OFFICE: (636) 797-8405
CELL: (314) 952-5338
CERTIFICATE OF AUTHORITY 0975

ANIMAL RESOURCE CENTER
4848 State Rte. 30
House Springs, Missouri 63051

ISSUE DATE 4/15/2020
SCALE
Job Number 15169
Sheet Number C3.0

1406R RWP RETAINING WALL
Plotted On 4/7/2015



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SITE PLAN

Date	Revisions
4/15/2020	ISSUED FOR BID

OWNER: Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

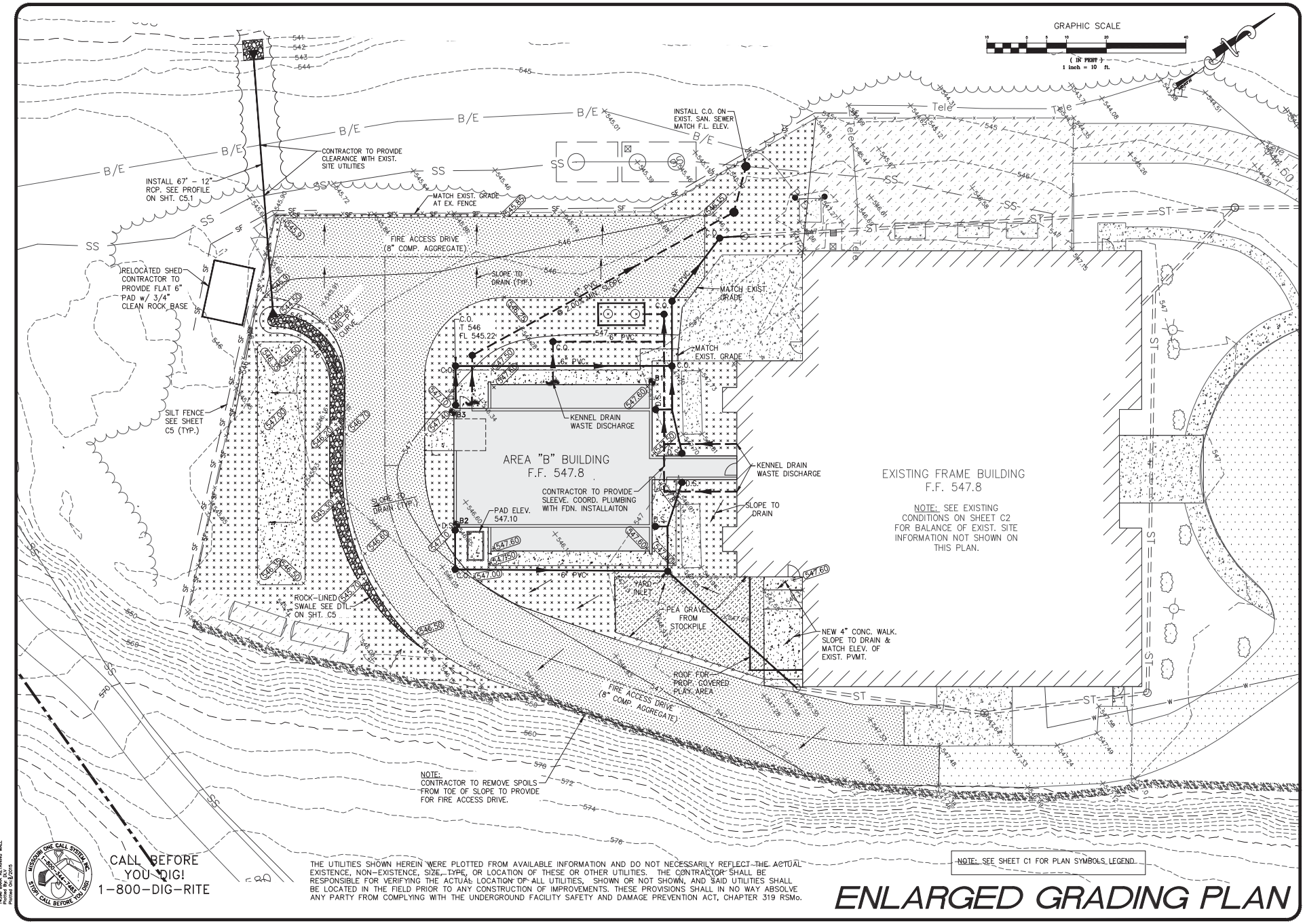
SEAL: DAVID L. VONARX E-26647

CIVIL ENGINEER: VonArx Engineering
10765 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
OFFICE: (636) 797-8405
CELL: (314) 952-5308
CERTIFICATE OF AUTHORITY 0975

ANIMAL RESOURCE CENTER
4848 State Rte. 30
House Springs, Missouri 63051

ISSUE DATE 4/15/2020
SCALE
Job Number 15169
Sheet Number C4.1

14506 RWP RETAINING WALL
Plotted By: DAVID VONARX
Plotted On 6/2015



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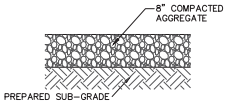
NOTE: SEE SHEET C1 FOR PLAN SYMBOLS LEGEND

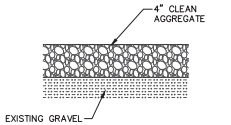
ENLARGED GRADING PLAN

Date	4/15/2020
Revisions	ISSUED FOR BID
OWNER	Jefferson County, Missouri 725 Maple Street Hillsboro, Missouri 63050 636-797-5577
SEAL	DAVID L. VONARX E-26647 DATE:
CIVIL ENGINEER	VonArx Engineering 10785 BUSINESS 21, SUITE A HILLSBORO, MISSOURI 63050 CERTIFICATE OF AUTHORITY 0975 OFFICE: (636) 797-8405 CELL: (314) 952-5308
PROJECT	ANIMAL RESOURCE CENTER 4848 State Rte. 30 House Springs, Missouri 63051
ISSUE DATE	4/15/2020
SCALE	
Job Number	15169
Sheet Number	C4.2

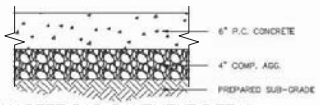
14506 RWP RETAINING WALL
Plotted By: Ryan Kelly
Plotted On: 4/7/2015



FIRE ACCESS ROAD PAVEMENT DETAIL
N.T.S.

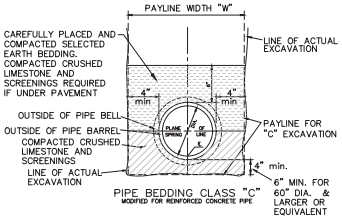


YARD COVER PAVEMENT DETAIL
N.T.S.

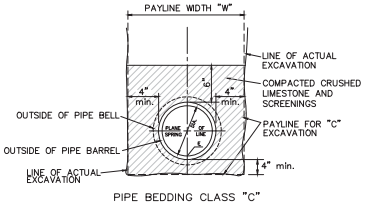


CONCRETE PAD PAVEMENT DETAIL
N.T.S.

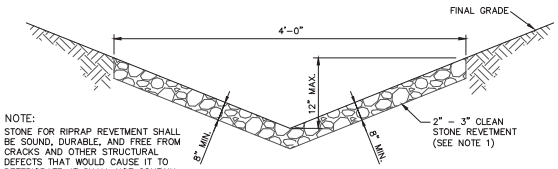
NOTES:
1. PROVIDE CONTRACTION JOINTS AT 10' O.C. EACH WAY.
2. PROVIDE 1/2" EXPANSION JOINTS AT 20' O.C. EACH WAY.
3. SEE CONCRETE SIDEWALK DETAIL FOR CONSTRUCTION DETAILS.



RCP PIPE BEDDING DETAIL
N.T.S.



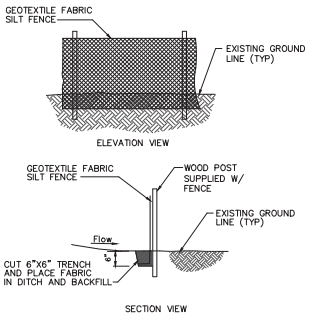
PIPE BEDDING DETAIL
N.T.S.



NOTE:
STONE FOR RIPRAP REVETMENT SHALL BE SOUND, DURABLE, AND FREE FROM CRACKS AND OTHER STRUCTURAL DEFECTS THAT WOULD CAUSE IT TO DETERIORATE. IT SHALL NOT CONTAIN ANY SOAPSTONE, SHALE, OR OTHER MATERIAL EASILY DISINTEGRATED.

RIP RAP SWALE DETAIL
(FOR LOCATIONS SEE PLAN) NT.S.

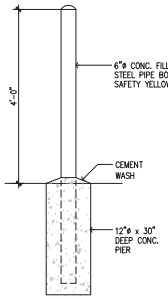
NOTE: WHEN JOINING TWO OR MORE SILT FENCES TOGETHER TIE THE TWO END POSTS TOGETHER WITH EXISTING NYLON CORD.



SILTATION CONTROL SILT FENCE DETAIL
N.T.S.

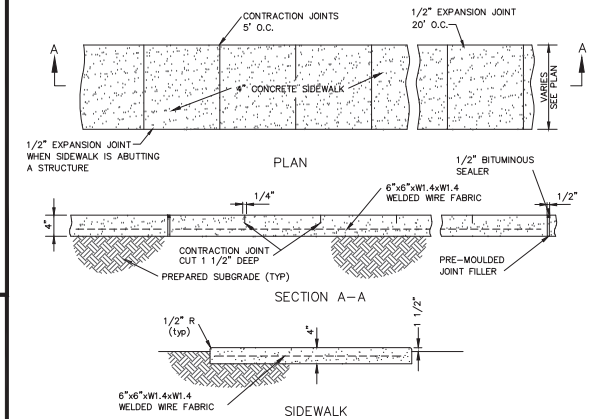
SILTATION MAINTENANCE NOTES:

1. SILTATION CONTROL BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
2. CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED BALES, END RUNS AND UNDERCUTTING BENEATH BALES OR FENCE.
3. NECESSARY REPAIRS TO BARRIERS OR REPLACEMENT OF BALES OR FENCE SHALL BE ACCOMPLISHED PROMPTLY.
4. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH RAINFALL. THEY MUST BE REMOVED WHEN THE LEVEL OF DEPOSITION REAHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
5. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER SILTATION CONTROL BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
6. ALL EXPOSED SLOPES WHETHER TEMPORARY OR PERMANENT SHALL BE SEEDED PER SPECIFICATIONS IMMEDIATELY UPON COMPLETION.
7. ALL FLOWLINES OF DIVERSION DITCHES AND SWALES SHALL BE PROTECTED AS NEEDED.

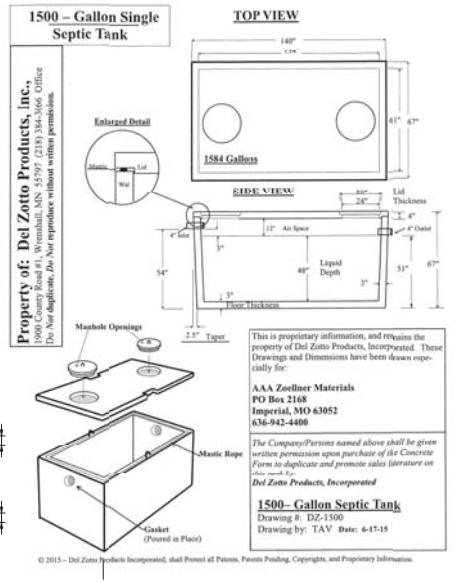


SEE PLAN FOR LOCATIONS.

CONCRETE-FILLED PIPE BOLLARD
N.T.S.



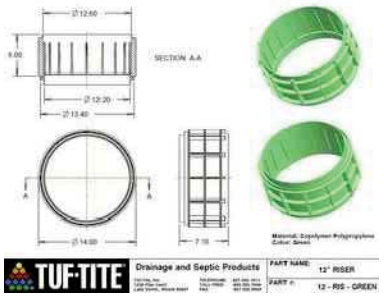
CONCRETE SIDEWALK DETAIL
N.T.S.

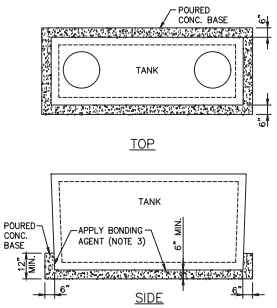


1500 GALLON PRECAST CONCRETE TANK DETAILS
N.T.S.

INSTALLATION PROCEDURES:

1. EXCAVATE AND MEASURE FOR APPROPRIATE TANK DIMENSIONS. ALLOW FOR AN ADDITIONAL 6-12 INCHES OF CLEARANCE AROUND TANK.
2. PLACE 4" OF COMPACTED 2" CLEAN GRANULAR FILL IN BOTTOM OF EXCAVATION AND LEVEL.
3. INSTALL CONCRETE BASE TO ADDRESS BUOYANCY. APPLY WELD CRETE BONDING AGENT TO INSIDE OF BASE OR OUTSIDE OF TANK ALL AROUND – SEE DETAIL AT LEFT.
4. SET TANK IN BASE AND SETTLE TANK.
5. LEVEL TANK AND INSTALL PLUMBING AS REQ'D.
6. BACKFILL AROUND THE TANK WITH GRANULAR MATERIAL (1/2"-3/4" CLEAN) TO 12" BELOW SURROUNDING GRADE. PLACE 12" OF COMPACTED TOP SOIL OVER THE EXCAVATION.
7. THE TANK LID IS INSTALLED WITH ONE 12" TUFF TITE SECTION.





CONCRETE TANK BASE DETAIL
N.T.S.

Weld-Crete Guide Specifications
Division 3 & 9
1. General
 1.1 Product Handling
  a. Deliver Weld-Crete to job in original container with seals unbroken and use without reducing.
  b. Materials Storage: Protect Weld-Crete from freezing.
 1.2 Environmental Conditions
  a. Air and surface temperatures must be above freezing during application of Weld-Crete.
2. Products
 2.1 Materials
  a. Bonding Agent: Weld-Crete, Larsen Products Corp., Jessup, Maryland.
3. Execution
 3.1 Surface Preparation
  a. Surfaces to receive Weld-Crete MUST BE CLEAN, free from loose material, dust, dirt, oil, grease, wax, loose paint,mildew, rust, laitance or efflorescence. If preparing an old concrete floor surface (steel trowel finish), mechanically scarify the surface and follow with an acid wash and thoroughly rinse with clean water.
  An economical method for cleaning concrete floor surfaces is to use a 10% muriatic acid solution followed by a thorough washing. Degreasing solvents such as Varsol are
  also effective.
  b. Surfaces to receive Weld-Crete MUST BE STRUCTURALLY SOUND. On newly placed concrete
  floors to receive a bonded topping, give the surface a rake or broom finish. Surfaces with form releasing agents, curing compounds, hardeners and sealers must be compatible with Weld-Crete. Glossy painted surfaces should be dulled with an abrasive. New paint should cure 7 days before applying Weld-Crete. Paints must be firmly adhered to the substrate. Do not apply over paints or materials that are soluble in water. Do not apply over frozen concrete or plastic surfaces. Weld-Crete may be placed over dry or damp surfaces (eliminate all water puddles). Do not apply where hydrostatic pressure is present in the substrate. Surfaces should be inspected for excessive cracking and properly prepared prior to application of the bonding agent.

Weld-Crete Guide Specifications (CONT.)
 3.2 Installation
  a. Application of bonding agent: Apply Weld-Crete uniformly, using brush, roller or spray, to from a continuous blue film over the entire surface. Allow one hour to dry. EXCEPTION: FAST SET PATCHING CEMENTS AND GROUTS MUST BE APPLIED WHILE THE WELD-CRETE FILM IS STILL TACKY.
  b. Inspection of bonding agent: Prior to placement of cementitious topping, inspect bonding agent application for continuity of blue film over the entire bonding surface. Do not apply new concrete to frozen Weld-Crete. Reapply Weld-Crete over areas not satisfactorily covered. Protect the applied film from dirt and debris until the fresh concrete overlay is in place.
 3.2.1 Application of Concrete Overlays
  a. Delayed toppings shall be over Weld-Crete in a minimum 1/2 inch thickness on surfaces shown and specified. Provide for a butt joint at adjacent edges. All joints must duplicate the joints in the substrate and all joints must be sealed against water penetration. Form isolation joints or cut with a dry vacuum saw. Cut control joints not more than one half the depth of the concrete overlay. Remove standing water from newly bonded concrete surfaces. Concrete toppings can be applied as soon as the film is dry, or delayed a week to 10 days, with no effect on the bond. Follow same application for overlays on precast hollowcore floor systems. Follow Portland Cement Association Standards.
  b. Follow accepted industry standards for protection of newly bonded concrete. Do not use a "wet" type saw to cut isolation joints on newly bonded concrete overlays. Seal all joints against water penetration.
 3.2.2 Bonded Concrete Shear Wall
  a. Prior to application of Weld-Crete, set all anchors on existing wall as shown and specified. Apply Weld-Crete as directed, then proceed with placement of reinforcing steel, erection of forms and placement of concrete. Seal all joints against water penetration.

14596 RWP RETAINING WALL
Plotted On 6/2015

OWNER:
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL:
DAVID L. VONARX E-26647
DATE:

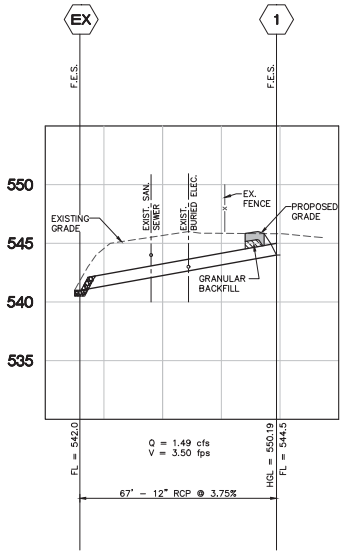
CIVIL ENGINEER:
VonArx Engineering
10785 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
EMAIL: DAVE@VONARXENG.COM
CERTIFICATE OF AUTHORITY 0975
OFFICE: (636) 797-8405
CELL: (314) 952-5338

Revisions	Date
ISSUED FOR BID	4/15/2020

ANIMAL RESOURCE CENTER
4848 State Rte. 30
House Springs, Missouri 63051

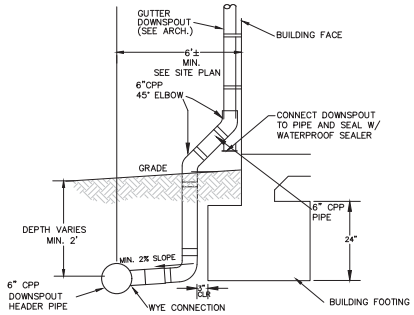
ISSUE DATE 4/15/2020
SCALE
Job Number 15169
Sheet Number C5.0

CONSTRUCTION DETAILS



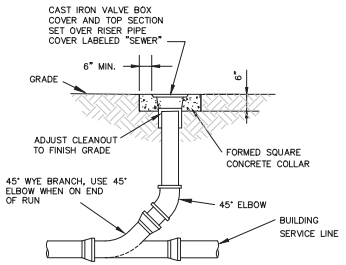
STORM SEWER PROFILES

SCALE: 1" = 20' HORZ.
1" = 5' VERT.



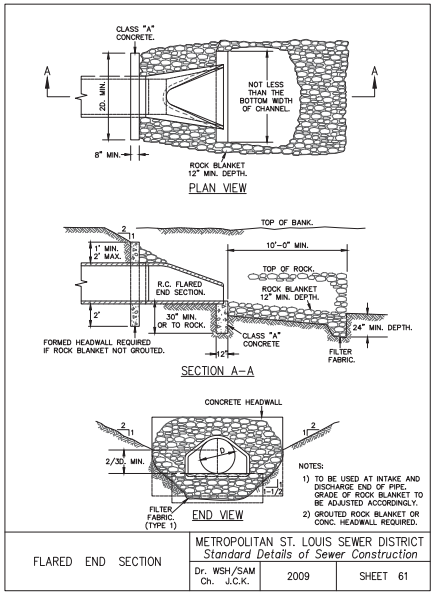
DOWNSPOUT CONNECTION

N.T.S.



SEWER CLEANOUT DETAIL

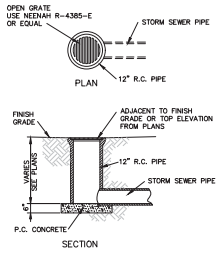
N.T.S.



FLARED END SECTION

METROPOLITAN ST. LOUIS SEWER DISTRICT
Standard Details of Sewer Construction

Dr. WSH/SAM Ch. J.C.K.	2009	SHEET 61



YARD DRAIN

N.T.S.

DETAILS AND PROFILES

Revisions	Date	ISSUED FOR BID
	4/15/2020	

OWNER:
Jefferson County, Missouri
725 Maple Street
Hillsboro, Missouri 63050
636-797-5577

SEAL: DAVID L. VONARX E-26647 DATE:

CIVIL ENGINEER:
VonArx Engineering
10765 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
CERTIFICATE OF AUTHORITY 0975
OFFICE: (636) 797-8405
CELL: (314) 952-3338

ANIMAL RESOURCE CENTER
4848 State Rte. 30
House Springs, Missouri 63051

ISSUE DATE
4/15/2020

SCALE

Job Number
15169

Sheet Number
C5.1

14506 RMR RETAINING WALL
Project Plan
Plotted On 6/2015